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Abstract: Medical informatics is a scientific discipline which intersects medical related information and computer science. The network and device are suffering from a malicious attack like viruses, worms and different authentication attack. In modern healthcare organization, the billing system are directly connect to the internet and different machines in the health system so the attacker can attack like man in the middle attack and can fraud Transaction. The aim of the project is to provide security for the billing system so there will be proper Transaction. This project provides a mechanism to overcome fraud transaction in the healthcare system.

1. In this project, we provide a security for the data in cloud we are using a Technique of AES Encryption Method for 128-bit keys.
2. KeyExpansion—round keys Has to be derived from the cipher key using Rijndael’s key schedule
3. Providing security for the billing system to overcome fraud transaction.
4. Infrastructure as a Service (IaaS) Infrastructure as a service provides companies with computing resources including servers, networking, storage, and data centre space on a pay-per-use basis.

Index Terms- Cloud Computing, Billing System, IaaS, AES

I. INTRODUCTION

Medical Informatics is a scientific discipline which intersects medical related information and computer science. It is a controlled scientific field of study which focuses on acquiring information, storage, retrieval and processing of medical data to interpret knowledge for the purpose of predication and decision making. This personal health information is stored, managed and controlled in one place in the web. This makes the easy sharing of medical information efficient. This health information are stored and maintained by the health organization, third party service provider the data should be secure since it contains the crucial and sensitive data related to the patient.

Figure 1.1: Cloud Computing

In early days the patient information are stored in paper document this may lead to loss of data to overcome this in recent times new architectures are designed to store the patient information in cloud. and privacy of the data stored in the cloud. MHR contains the sensitive data so the data in the cloud should be secure to provide the security the patient could able to control over the data so that only legitimate patient can access the data.

Providing efficient healthcare services is becoming a challenging problem for governments across the world. On one hand, the increasing health-awareness among people has led to soaring demands for the health care services. The governments have limited fund and limited personnel to dedicate to this sector.

A possible approach to maintain data secure in cloud is to encrypt the data before storing it in the cloud. Encryption of the data is decided by the MHR owner and they are capable of giving permission to other to access the file. The network and devices are suffering from a malicious attack like viruses, worms and different authentication attack like man-in-the-middle attack, brute-force attack, session hijacking attack, replay attack using this hackers can hack the sensitive data. Today, cloud computing presents an immense opportunity for the health care sector. First, it can significantly reduce the initial capital investments in the IT infrastructure in hospitals due to the pay-as-you-go pricing models. Access control in clouds is gaining...
attention because several users store their data/files securely in cloud storage. It is important that only authorized users have access permission on stored data to valid service. Access control is widely being used in healthcare where clouds are being used to store sensitive information about patients to enable access to the medical professionals, hospital staff, researchers, and policy makers. The data or files are encrypted under access policy using attribute-based encryption method and AES and stored in the cloud. In order to access data users are given sets of attributes and corresponding keys. Users with matching set of attributes are allowed to decrypt and access the information stored in the cloud.

II. RELATED WORK

Compared to other industries, the healthcare industry has significantly underutilized the technology to improve operational efficiency.

Figure 2.1: Issues in Existing System

Most healthcare systems still rely on paper medical records. Information that is digitized is typically not portable, inhibiting information sharing amongst the different healthcare sectors. Use of technology to facilitate collaboration and coordination between patients, physicians and amongst the medical community is limited.

III. SYSTEM DESIGN

The healthcare industry is shifting toward an information-centric care delivery model, which supports cooperation, collaborative workflows and information sharing. Cloud computing provides an infrastructure that allows hospitals, medical practices, insurance companies, and research facilities to tap improved computing resources at lower initial capital outlays. Additionally, cloud environments will lower the barriers for innovation and modernization of HIT systems and applications.

Cloud computing caters to the key technology requirements of the healthcare industry:

- Enables on-demand access to computing and large storage facilities which are not provided in traditional IT environments.
- Supports big data sets for electronic health records (EHR), radiology images and genomic data offloading, from hospital IT departments.
- Facilitates the sharing of EHRs among authorized physicians and hospitals in various geographic areas, providing more timely access to life-saving information and reducing the need for duplicate testing.
- Improves the ability to analyze and track information, so that data on treatments, costs, performance, and effectiveness studies can be analyzed and acted upon.
IV. SYSTEM OBSERVATION

A. Characteristics of HealthCare billing system

Some important characteristics of Billing System are:

4.1 Server monitoring, backups, and data recovery:

Definite measures and features within your EHR billing system should be available in order to recover data loss. Prevention is always the best measure and a system should be firmly in place for server monitoring and backups.

4.2 Multi-user, secure and user-friendly interface capabilities:

Users should be able to utilize a flexible claim editing feature with 24/7 continuous access to claims. Your billing feature should provide staff access to patient and insurance information as it pertains to billing. User-friendly capabilities are also desirable, so get key staff on-board and ask them what they want in their electronic billing features. Keep them aware of changes.

4.3 Electronic tracking of payments; transparent payment process:

Make the electronic tracking of payment process completely transparent to everyone involved. All details should be tracked in the payment process. Features should include the ability to log and communicate every action enlisted in order to get the claim paid. Claims processing improvement measures should be shared with all providers.

4.4 Claims rejection analysis in real time displaying clear error codes:

Error codes should be displayed in clear, concise language, not just as confusing letters and numbers. This feature can enable users to immediately resolve problematic claims by attending to these rejected claims. It helps the user to prevent ongoing, repeat problems in payment rejections.

B. Uses of Cloud Computing in Hospital

- First, it can significantly reduce the initial investments in the IT infrastructure in hospitals due to pay-as-you-go pricing model.

- Second, it can improve the utilization of IT resources and improve the quality of healthcare service delivery among the healthcare sector.

- Third, sharing and managing large amounts of medical information including EHR and X-ray images through cloud environment.

C. Billing Systems

In today’s civilized society, the people are betrayed with proper healthcare facilities. In order to minimize the cost and complexity involved in processing traditional billing system, Electronic health records and electronic billing systems have been proposed as mechanisms to help curb the rising costs of healthcare and also helps to detect the fraudulent practices in healthcare system. Many healthcare professionals, hospitals and insurance agencies maintains the paper-based records, billing of the patients which is been converted later into computer-based billing and records which can be abused, modified or lost for malpractice done by frauds either for money or grudge. Hence the personal information of the patients is revealed, bogus information are entered and misused in traditional Healthcare system. Moreover Traditional healthcare system depends on the centralized server which is unreliable, insecure in accessing, storing medical data regardless of time, cost and location. Hence it is more complex and lack privacy and cost involved in integrating medical information is expensive. Given this scenario, Electronic Health Records (EHR) and Electronic Medical Billing (EMB) have been proposed as a mechanism which reduces healthcare disparities and ensures adequate privacy and security. E-Health application is a cloud solution that provides patients, healthcare professionals and healthcare payers a platform for exchange of electronic information about billing activities. It provides a highly reliable and secure electronic billing and record management system.

Let's come to initial process, that is when the patient enters to the hospital he will get registered. So once the patient has registered, they will be having their own unique login id that is user name and password. After interaction between Doctor and the Patient, if the doctor advises the patient to undergo analysis within the Healthcare Machines like CT-Scan or Dialysis or MRI and so on. After undergoing analysis the patient will get the bill for that and we need to take it to the counter their we will pay the bill. Finally we get the receipt for the bill payer. We are avoiding this lengthy process in our proposed system. The bill will be directly sent to the Billing System through the cloud. The bill generated will be directly sent to the Billing System through the cloud. And this bill information is safe from any type of
malicious attack, since it is encrypted using AES algorithm.

If we want to get the copy of the bill generated for a particular patient, he can just login to the hospital portal. And there will a particular link to the Billing System.

V. CONCLUSION

A number of transformations in the health care industry are driving the use of the Internet as a medium for sharing information among providers, patients, and administrators. New Internet-based health companies are being established to offer consumers medical information, tools to help them to monitor their care more effectively, and other medical products and services. Existing organizations are using the Internet to alter their position, relationships, role, and power in the health care industry by moving into new areas, often ones that involve their reaching out directly to patients. The more innovative care organizations are providing customers with Internet-based resources to help them to better assess their medical needs and to seek appropriate advice. These trends reflect and reinforce ongoing attempts to reduce medical costs by reducing hospital stays and outpatient care, especially in the emergency room, and by promoting prevention through better monitoring of wellness, chronic disease, and behavior.

REFERENCES


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