Survey on Cloud Computing Platform for eHealth Systems

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ABSTRACT

Cloud computing may be a new manner of delivering computing resources and services. The health care sector is changing quicker than ever before thanks to the demand of delivering higher quality medical services for fewer cash, and increased competitively between health care services suppliers. Cloud technology is employed to make network between patients, doctors, and care institutions by providing applications, services and additionally by keeping the information within the cloud. This paper primarily emphasize on challenges, need, advantages and benefits of mistreatment Cloud computing in Health Care Systems.

Keyword: eHealth system, cloud computing, health records, data mining

I. INTRODUCTION

Cloud computing is internet-based computing, wherever shared servers give computing power, storage, development platforms or software system to computers and alternative devices on demand. The care trade has historically underutilized technology as a method of up the delivery of patient care. Even today, organizations still deem paper medical records and written notes to tell and create decisions. Digital data is siloed between departments and applications, creating access to a patient's longitudinal record troublesome, if not possible.

This lack of access prices the healthcare trade lots of greenbacks every year in duplication and waste. Sharing of patient information among clinicians, departments and even patients is rare and sophisticated. A hospital's reliance on vendors to "knit" along their various technologies ends up in big-ticket and unproved information experiments that fail to deliver the expected outcomes. Most provider IT departments are at home with traditional technologies that need authorized software system platforms, and elaborate and hardware-heavy infrastructures supported by an outsized employees. The employee's members got to be experts all told areas of IT, together with hardware, software, networking, backup and archiving. As new technologies are introduced, the stress on the IT infrastructure begin to push the limits of the secure efficiencies. Whereas ground breaking in concept, government incentives merely do not cowl enough of actuality prices of overhauling legacy instrumentality and modernizing a facility.

Patients these days are higher advocates for his or her own healthcare; they're additional educated to their diseases and increasingly demand access to the most recent technologies. At the same time, they look for the simplest care at the simplest price and are willing to research their choices. As a result, demands for access to non-public patient records are increasing and organizations got to continue. Once voters will access bank accounts from anyplace within the

world, withdraw cash, get balances and create payments, it's arduous for them to know why they cannot have universal access to their secure health information. As care suppliers would like price effective automating processes which provides additional profits, cloud computing can give good platform within the care information technology house. Several hospitals could share infrastructure with sizable amount of systems coupled along. By this pooling the hospitals mechanically cut back the price and increase utilization. The resources are delivered only they are needed. This additionally means that time period convenience of patient data for doctors, nursing employees and alternative support services personnel from any net enabled device.

II. CLOUD COMPUTING

Cloud computing is a methodology for delivering information technology (IT) services within which resources are retrieved from the web through web-based tools and applications, as opposition an immediate affiliation to a server. Instead of keeping files on a proprietary disk drive or native memory device, cloud-based storage makes it doable to avoid wasting them to a far off info. As long as an device has access to the net, its access to the info and also the software package programs to run it. It's referred to as cloud computing as a result of the knowledge being accessed is found in "the cloud" and doesn't need a user to be during a specific place to realize access to that. This kind of system permits staff to figure remotely. Firms providing cloud services modify users to store files and applications on remote servers, and so access all the info via the web.

III. LITERATURE SURVEY

In 2010, the primary national e-health initiative in Jordan, the Hakeem project, was launched, to unify cloud computing and tending services. However, in spite of getting an implemented electronic Health Records (HER) continue to face variety of challenges and limitations. Thus, the ultimate promise of EHR systems might not be consummated and the work of workers not created easier. The most objective of this analysis focuses on determination the technical challenges that faces physician nationwide implementation, whereby Hospitals in Jordan typically lack ICT infrastructure, and most public hospitals don't even have an IT department, and aren't interconnected. The present limitations of current e-health systems are mentioned in [1].

Dua' A. Nassar et al. presented a comprehensive study on the EHR of physician, the paper highlights the technical and monetary challenges and proposes recommendations to overcome the challenges. As such, the analysis mentioned several guidelines to beat these challenges in Hakeem implementation and proposes ways in which to control, and manage these challenges, they known that physician faces variety of challenges, embrace monetary, technological, and policy and legislative challenges, while other challenges, like stakeholder and organizational challenges, is also additional specific to the country in question [2, 3].

Abu Khousa [4] known and suggests recommendations to beat challenges faced by the Hakeem project and suggests ways in which to control and manage these challenges. Found that the expectation is that the implementation of physician can offer a contemporary health information management system throughout Jordan. However, several technical and monetary challenges still exist that might hinder the physician implementation or limit its success. Cloud computing in tending is of growing interest solely few in implementations however exist and plenty of papers simply use the term "cloud" synonymously for "using virtual machines" or "web-based" with no represented advantage of the cloud paradigm. The biggest threat to the adoption within the tending domain is caused by involving external

cloud partners: several problems of data safety and security are still to be resolved. Until then, cloud computing is favoured additional for singular, individual features like physical property, pay-per-use and broad network access, instead of as cloud paradigm on its own.

a. Medical Image in Cloud

Data associated with medical pictures, represents the largest set of knowledge treated in clinical environment. In [5], an example of an Image archive supported Cloud design (and in particular victimization Microsoft Windows Azure) was implemented. It includes a DICOM (Digital Imaging and Communications in Medicine) server that handles normal store/query/retrieve requests; a DICOM image trained worker that parses the information and store them in a very SQL Azure database; and an internet UI for looking and viewing archived pictures based on patient and image attributes. In [6] is proposed a system known as MIFAS (Medical Image File Accessing System) to solve the exchanging, storing and sharing on Medical pictures of crossing the various hospitals problems. The aims of the paper were to resolve the challenge in Medical Image exchanging, storing and sharing problems with EMR (Electronic Medical Record). In [8] is proposed a secure PACS Cloud gateway to access PACS Cloud archive, which provides a high security level and while not cloud's supplier dependence (using a personal Cloud solution). A study regarding the security problems concerned in knowledge storage and sharing through cloud, is bestowed in [7]. It highlights the various types of security issues and the way their existence will have an effect on the cloud user's victimization the model Security as a Service (SECaaS)

b. Data management of Health care unit

Similarly to the issues associated with the images archive solutions, another set of issues

regards the management of clinical knowledge. The processes for patients' knowledge assortment require a many attentions so as to gather and analyse the information. In [6], is planned a solution to automatize this process by using "sensors" connected to existing medical equipment that are inter-connected to exchange services. The proposal is predicated on the ideas of utility computing and wireless device networks. The data becomes available within the "cloud" from wherever it will be processed by expert systems and/or distributed to medical employees. In [7] is presented associate degree E-Healthcare model for present services for data acquisition archiving and presentation in Cloud. The management problems and security considerations in cloud domains are addressed by a services design planned. The model includes Wireless device Networks besides communication and storage systems for a typical hospital taking advantage of the Cloud Services design (CSA).

c. Health Support System

Another crucial drawback in health regards the management of the emergency. Throughout emergency case management at the emergency department of a hospital, readily access to parts of past patient information and to prehospital care data enables proper diagnosis and treatment, eliminates the risk for medical and medication errors and streamlines the emergency healthcare process. In [9] is described a cloud-based service-oriented architecture (SOA) for the implementation of an electronic emergency patient record system (E-EPR) that offer functionality for managing (retrieving, transforming, exchanging and storing) emergency case information and patient critical medical information in a distributed and present manner that supports several platforms and applications. In [9] is proposed a PHR (Patient Health Records) based EMS (Emergency Medical system) in a cloud computing environment. In [10] a study of healthcare services provided through a

telemedicine familiarized Emergency Health support System is examined. The paper compares a system deployed within the cloud versus a co-located surroundings primarily based on information gathered from the epitome. An epitome of Emergency Health network has been developed and the system has been modelled and tested to derive performance statistics of the system's capability.

IV. E-HEALTH SECURITY ISSUES

Nowadays, health care is focused on accessing medical records anytime and anyplace. The employment of cloud computing paradigm in aid facilitates medical records sharing and integration. Even supposing, the cloud computing paradigm offers many edges, it additionally poses privacy and security threats to the health information [11]. Primarily, the cloud service providers ought to alter security issues within the cloud to enhance the trust level between the patients and aid providers [12]–[14]. During this section, we have a tendency to discuss necessary security necessities for eHealth systems to handle the arising security and privacy problems preventive the wide-scale adoption of cloud computing by aid suppliers. There is an extended line of analysis touching on the protection requirements of aid cloud applications. As an example, the ISO/TS 18308 customary defines the protection and privacy problems for EHRs. The International Medical Informatics Association (IMIA) investigated the problems of knowledge protection and security in healthcare networked systems. US Health and Human Services (HHS) revealed a report about Personal Health Records (PHRs), aiming at developing PHRs and PHR systems to place forward a vision that "would create a PHR that patients, doctors and alternative health care providers might firmly access through the web no matter wherever a patient is seeking treatment."

In [15], Bakker et al. gift a short summary on cloud computing security in terms of security issues, models, threats and precautions. Avancha et al. [16] examine the privacy requirements of mobile computing technologies that have the potential to remodel aid business. Through an extensive survey of literature, Avancha et al. propose a conceptual privacy framework for aid applications. In [17], Ardagna et al. gift an in depth survey on the interface between cloud security and cloud security assurance. They initial give an outline of the state of the art on cloud security. Then, they introduce the notion of cloud security assurance and analyse its growing impact on cloud security approaches. Finally, they gift some recommendations for the development of next-generation cloud security and assurance solutions. ibrahim et al. [17] propose a framework which permits secure sharing of EHRs over the cloud among different aid suppliers. The framework ensures the confidentiality, integrity, credibleness, availableness and auditability of EHRs. on the road, [12] gift an extensive survey that aims to cover the state of the art privacy-preserving approaches utilized in eHealth clouds.

They additionally classify the privacy-preserving approaches into cryptographic and non-cryptographic approaches. Furthermore, the strengths and weaknesses of the proposed approaches are rumoured and a few open problems are highlighted.

V. CONCLUSION

Cloud computing is dynamically changing our lives in many ways at a really quick pace. Day by day utilization of cloud computing technologies is increasing in each a part of the globe. The cloud computing solutions in tending will help the physicians to stay in contact with their patients and examine their health condition effectively at a low price. By using the EHR health record maintenance and Mobile Health applications of cloud computing

our planned system possesses more security edges compared to the approach followed in that current system. There is also some concern relating to the security and different problems with information however still as each drawback has a solution within the similar way these problems too will be overcome at some point by man once that utilization of cloud technologies in tending business would lead to a brand new era in the field of tending. Each section within the society will access this tending by implementation of this technology. It is always remembered that cloud computing continues to be a developing technology ,which implies that within the future years the services it offers will be larger than our expectations or just on the far side our imagination.

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