A Study on Cloud Based Techniques in Health Care Services

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Abstract— The word "Cloud Computing" is a recent catchphrase in the IT world and has been a major topic of conversation as of late and is emerging as one of the most important technologies of this decade. For health check-up there are many systems available such as thyrocare android app, E-wireless healthcare system, practo etc. Healthcare professionals must have all the in order they need to make on time patient-care decision. The rising of mobility connections, people can access all the resources hosted in the cloud any time using any device. In the last few years, expectations about patient privacy information, medical services, data retention and health care supplier ease of use have raised radically[6]. For solving such kind of issues I suggest the electronic health care systems using cloud computing techniques. Cloud technology reduces the time delay and more time can be spared for patient care. Cloud computing is a cost effective method that facilitate real-time data collection, data storage and exchange between healthcare organizations.

Key words: Cloud, Cloud Computing, HealthCare, Electronic Records, Security

I. INTRODUCTION

Cloud computing is one of the most recent innovative technologies in world. Many governments have considered that the solution to this problem is to reduce public operating cost on healthcare, to decrease the budgets for health services, to rationalize the medical plans for the population. Advanced equipment has entered in human lives so much that it has started to become an essential part of human life nowadays. Cellular phones have brought a revolutionary change in the lifestyle the way we are living. We endlessly look to social media to inform our personal development and business decisions to the world over network. For the successful implementation of nationwide e-health program rigorous analysis has to be perform for the requirements of the program and its future increase[1]. National healthcare programs including Hakeem system environments needs an wide requirements analysis concerning datacenter solution architecture, data and file types for EMR and billing system, medical images databases, storage system, infrastructure and support services required for a unified solution. An architecture solution is dedicated to use and maintain the program production, development, pre-production, training and testing environments[5]. Hakeem faces technical challenges, whereby, Hospitals in Jordan generally lack Information and Communication Technologies (ICT) infrastructure, and most public hospitals do not even have an IT department, and are not interconnected. In healthcare, the use of cloud computing have been Proposed as a means for maintaining health records, monitoring patients, managing diseases and cares more efficiently and effectively, or collaborating with peers and analyzing data[2].

A. Cloud Computing Basic

Cloud computing has newly come out as a new sculpt for deliver and hosting in order Technology (IT) services over the internet[6]. It provides services that are on-demand, scalable, and multi-tenant on the pay-per-use base.

Cloud includes several types of service models:
- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)
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SaaS provides a variety of software applications which customers can use without having to install them on their machines. The user does not need managing or controlling the fundamental Cloud infrastructure or individual application capability other than incomplete user-specific application setting[8].

B. Platform as a Service (PaaS)

It comprises a set of software development and deployment technology e.g. operating systems, application enlarge environment, databases, and web servers. The user does not need running or controlling the original infrastructure, but has managed over deployed applications.

C. Infrastructure as a Service (IaaS)

This model offers a relationship with services like processing, storage and network bandwidth. The user does not need managing or controlling the fundamental Cloud infrastructure, but has managed more operating systems, applications and programming frameworks.

II. HEALTHCARE ON CLOUD
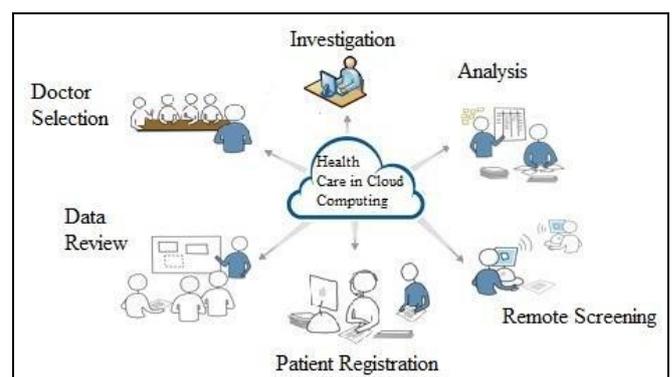
- Patient Registration:

In the first phase when the patient enters in the clinic or hospital, his/her case registration would be carried out. If the patient is previously under treatment then than his/her data would be retrieved from the database.

- Doctor Selection:

Cloud Healthcare service will provide a main benefit of doctor selection from the list of doctor's portion in the cloud health care, best outfit to the patient's diagnosis[4]. This

service enables the patient to get the best clinical treatment from the specialist doctor.

− Data Management and Review:

Health care centers have to store and uphold every byte of data about human resource, account files and patient medical records including patient history, diagnosis, treatment, dietary information etc. Cloud data storage space and maintenance frameworks like HDFS, Hive, HBase etc offer a cost efficient solution to the problem with improved security and ease of management.

− Investigation:

This service provides a stage to the medical practitioners and pharmacist to apply their inventive ideas and investigate new medicine/drugs while ensure its efficiency and no side effects.

− Analysis:

Healthcare sector uses in sequence systems for the better information flow within and outside the association. Properly managed information helps to generate the advice upon the study of patient illness record.

− Remote Screening:

Information and communication technologies have brought a innovative change by behind and providing patient care services beyond the medical centre's.

A. Telemedicine

Artificial Intelligence is the next generation fantastic power technology. Combination of extensive resource efficiency of cloud and Artificial Intelligence will alter the face of health sector. Latest mobile technologies and intelligent medical devices, telemedicine has grown-up to include not only tele-consultations and tele surgeries, but also health record exchange, video-conferencing and home monitoring. Cloud computing and the associated ease of services deployment and data storage space is an enabler for telemedicine[3].

Cloud based software could be developed to make feasible the doctor-patient and doctor-doctor interaction as well as to facilitate the transmission and archiving of medical images. proposed such a system to give the treatment for distant dermatology patients. Cloud driven telemedicine services offer the following advantages:

− It offers live communication between the participants without being at the same site.
− Patient medical data can be common in real time across the geographical boundaries.
− It is flexible model as patients don't need to visit the doctor for receiving a medical advice. Moreover, surgeons can retrieve the archived patient files at their own time and place.
− It saves on the patients' traveling cost and time. Medical specialists can adopt this model to reduce the unnecessary visits of patients thus cutback their time.

III. BENEFITS OF ALLOCATING MEDICAL INFORMATION ON CLOUD PLATFORM

A. Ease of Access:

Despite the elegant name, cloud computing is a highly simple to use technology to add to medical association. In fact, part of the application of cloud computing for a lot of

business enterprises is related to speed of the technology and ease of access.

B. Cost:

Giving out of medical record on cloud platform is a cost efficient technology. In fact, some studies Showed that use of cloud computing technology can reduce the costs of Information Technology industry by 20% yearly through minimize the hardware, software and on-site IT costs.\

C. Increases Productivity and Efficiency:

Purchasing cloud computing services to expand infrastructure investments and supplements already-Stretched IT staff can make a healthcare organization much more resourceful when it comes to labor, patient care, and IT resource management.

D. Scalable to Cost-Effectively Meet an Organization's Needs:

With medical information archive volumes rising exponentially, many medical organizations are in Confusion how they will manage and pay for potentially big amount of future data storage space[5]. Cloud computing services work on a pay-as –you-go policy, with the user paying for the quantity of capacity actually used.

E. Creating a More Connected, Patient-Centric System:

Storing the patient medical information in one central repository in cloud has good advantage Instead of storing the medical information in many soiled PACS at different geographic location.

F. Challenges in Sharing Medical Information on Cloud Platform:

Although sharing of medical records on cloud platform makes the shift of medical information Faster and improves patient care, but the biggest stumbling block to widespread use of cloud computing technology for the distribution of medical record is still fear and unease about technology.

IV. CONCLUSION

Cloud computing system is a calculated service that has the ability to automatically control and optimize resource usage in regards to the type of service provided. Medical information systems is playing a main role in supporting doctors and nurses, enhancing the quality of medical services, reducing the medical expenses, and improving the care of chronic patients. Challenges such as security concerns and interoperability will increase due to the cloud-computing model[10]. Therefore, the adoption of the cloud is moving ahead slowly. A health system, also sometimes referred to as health care system or healthcare system is the association of people, institutions, and resources that deliver health care services to meet the health needs of target populations[7]. Thus, our view on moving e-Health on Cloud refers to the implementation of a solution meant to decrease infrastructure costs both in public and private sectors, improving the performance and QoS.

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