

CLOUD COMPUTING BASED TELEMEDICINE SERVICE

Rahul Kulkarni¹, Sharad Bharsakal², Ajay Patil³, Kunal Patil⁴

^{1,2,3,4} Student's, Dept. of Computer Engineering, Late G.N.Sapkal College of Engineering, Maharashtra, India

Abstract –"Health is the greatest possession". Various techniques are drawn for the best treatment of health of society. Because the technology is reaching its peak, it's rising in medical treatments quickly and productively organic process to "telemedicine"-invention of technology in drugs. Earlier slow and erroneous processes are replaced by precise and faultless methods involving high speed internet services. These techniques allow real-time data accessibility with proper security. The idea is based on cloud computing and live streaming of videos. The information is made available on the internet in a suitable format, from where it can be accessed by authorized medical staff. Cloud Computer has a revolutionary effect on telemedicine, Many maniacal professionals are already using advance telehealth application of cloud computing. According to various specialists and researchers, cloud computing can improve health care services to an undoubtedly large extent. This project shows the advancement in utilization of cloud computing in field of telehealth. It can contribute to improve health conditions all over the world.

Key Words: Healthcare, Telemedicine, Cloud Computing, Mobile device

1. INTRODUCTION

This document In Today's era global warming is affecting all over the world which majorly effect on Quality of healthcare services in rural and urban areas is not in proportion. Because of the insufficient number of physicians in rural areas, healthcare services are very poor. Rural India contains 68% of India's population with half of it living below poverty line, fighting for better and easy access to healthcare services. Health issues faced by rural areas are varying from severe malaria to uncontrollable diseases, from badly infected wound to cancer. The neglecting of the rural healthcare system is largely due to lack of specialist doctors in the rural sector. On the other hand, the major reason for the success of healthcare services in urban areas is due to its Simplicity and industrial development. With the growth of the Internet, several healthcare portals are now available to provide appropriate solutions to common places. Telemedicine consultations where a doctor remotely talks to a patient and gives advice, has its share of controversy. If you can't touch a patient ,How can you accurately diagnose his condition? Is that the doctor at the opposite finish lawfully chargeable for the diagnoses delivered via a telemedicine link? the doctor at the opposite finish lawfully to blame for the diagnoses delivered via a

telemedicine link? many studies are done to assess these problems. Using newer technologies in the field of telemedicine software's conferencing link has increased the clinical value of the consultation. Depending on the need and availability of communications infrastructure. Telemedicine has been viewed as the great healthcare hope for rural India, a technology that can transform the health statistics of remote India and medical practice in the country. Taking a doctor to an area where there is no doctor. Taking medical help to patients where no medical help existed before. Telepathy, teleradiology, teleophthalmology - these are the ways of accurately diagnosing from a distance.

1.1 Problem Statement

–Telemedicine is an adequate means of delivery in upto 99% of cases. It was yet cheaper than face-to-face outreach or clinic activities and patients accepted telemedicine as a valid form of continuity with healthcare professionals. Telemedicine is feasible means of delivery, multidisciplinary care to frail nursing home residents and may result in increased productivity and significant savings . world are facing serious consequences due to this climate change. Climate change means that Since telemedicine systems are located in the hospital premises, the medical staff who are busy with their routine work find it sometimes difficult to operate or attend to the practical operations of the telemedicine system . Many potential telemedicine projects have been hampered by the lack of appropriate telecommunication technology. 1) Telephone lines do not regularly supply adequate bandwidth for most telemedical Applications. 2) Many rural areas do not have cable wiring or other kinds of telecommunications access required for use of telemedicine applications The Internet is such a dynamic and rapidly evolving phenomenon that it seems impossible for traditional human information systems such as libraries, in person consultation and peer reviewed print media to keep pace. Internet use for health information for both practitioners and consumers continues to expand geometrically [8]. Objective of this paper is to ease the collection and computing. Cloud computing refers to both the applications delivered as the services over the Internet and hardware and software in data-centers that provide services. as service is highlighted in this paper. Cloud computing is essentially the use of remote servers hosted on the Internet to store and manage data. If a doctor is able to see and speak to patients in real time.

1.2 Objective

In this project, we tried to focus on how cloud computing can be used effectively in telemedicine to provide great convenience for both the patients as well as the physicians. Healthcare and medical communities that are separated by

Distance could benefit from these latest advances in telecommunication and information technologies.

2. RELATED WORK

- [1] Rolim C.O, Koch,F.L (2010) Used "A Cloud computing solution for patient Data collection in Health care Institutions,".
- [2] Krishan,S.M,Chutatape,O,Swaminathan(2002)appliedDesign of a mobile telemedicine system with wireless LAN," Asia-PacificConference on Circuits and Systems
- [3] Richard Wootoon John Craig,(2011)"Introduction to Telemedicine",2nded.,published by the Royal Society Of Medicine Press Ltd.
- [4] Alamri, A.(2012)"Cloud-Based E-Health Multimedia Framework HeterogeneousNetwork," International Conference onMultimedia and Expo Workshop
- [5] Khalifehsoltani, S.N.; Gerami, M.R.:(2010) "E-health Challenges, Opportunities and Experiences of Developing Countries," International Conference on e-Education, e-Business, e-Management, and e-Learning

3. PROPOSED SYSTEM

Computing facility help to implement a security model for preserving the privacy of medical big data using Decoy technique. In the system, when the user accesses his/her

Account, whether he/she is a legitimate user or an attacker, his/her first step would be accessing the DMBD. User profiling is done side by side. User profiling can help to determine whether a user is legitimate or not. The DMBD contains fake MBD, which are supposed to make an attacker believe that he/she has accessed the user's photos/medical image. If the user is legitimate he/she would move on to the next step. Moving to the next step, the legitimate user can access his/her OMBD. In the event of the user accessing only the DMBD, an SMS or email will be sent to the legitimate user to inform him/her that his/her account has been accessed.

4. SYSTEM IMPLEMENTATION

In the first module, the telemedicine approach is designed to support web database provider with computing services that can be implemented over multiple servers. Where the data storage, communication and processing transactions are fully controlled, costs of communication are symmetric, and the patients' information privacy and security are met. We propose fully connected sites on a web telemedicine heterogeneous network system with different bandwidths; 128 kbps, 512 kbps, or multiples. In this environment, some servers are used to execute the telemedicine queries triggered from different web database sites. Few servers are run the database programs and perform the fragmentation

Clustering- allocation computing services while the other servers are used to store the database fragments. Communications cost (MS/byte) is the cost of loading and processing data fragments between any two sites in WTDS. To control and simplify the proposed web telemedicine communication system, we assume that communication costs between sites are symmetric and proportional to the distance between them. Communication costs within the same site are neglected.

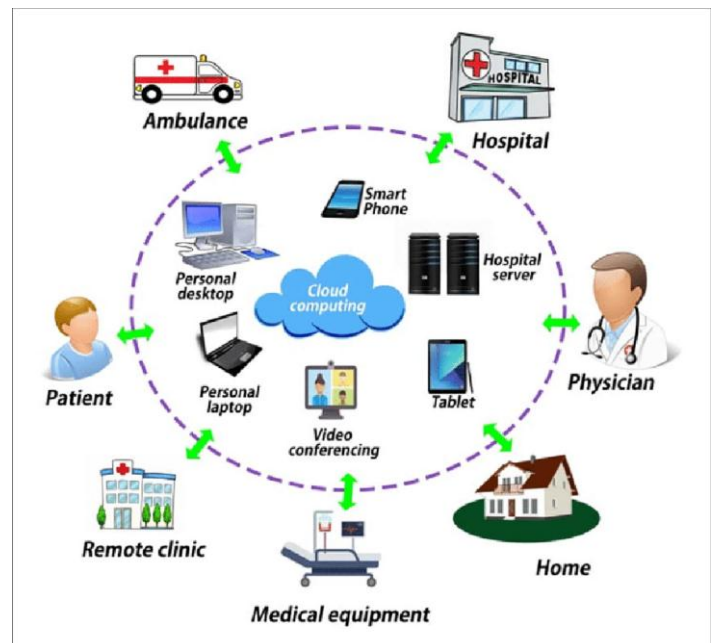


Figure 4.2: System Architecture

5. APPLICATIONS

1. **Live video:** This is a secure, real-time, two-way interaction between a patient and a clinician. Live video can be used for consultation, diagnostic, and treatment services.

2. Store-and-forward : This includes the transmission of patient data, recorded videos and digital images such as X-rays and photos via secure communication systems to a

Specialist, who can then review this information and provide a consultation at later time. Store-and-forward telemedicine systems can leverage secure cloud storage for its many benefits including on-demand scalability

3. Mobile Health it is estimated that 65 percent of interactions with healthcare facilities will occur via mobile devices. Currently, 80 percent of doctors are already using smartphones and medical apps.

4. ADVANTAGES

1. Security: One of the most common concerns when talking about the cloud is how secured is it to have all your apps and patient data in a third-party server? Especially when organizations need to comply with regulatory frameworks like Europe's General Data Protection Regulation (GDPR) for the protection of personal data, or the US's Health Insurance Portability and Accountability Act (HIPAA) for secure information portability, or the HITRUST Alliance's CSF, an associate in nursing industry-mediated certifiable standard for safeguarding sensitive information.

2. Cost: Since cloud computing runs under a subscription model, tending suppliers will lay aside cash from getting expensive systems and equipment. Plus, by adopting a cloud server, healthcare institutions can also reduce costs by victimization using the cloud provider's resources.

3. Data Storage: Healthcare providers have to deal with electronic medical records, patient portals, mobile apps, and big data analytics. That's a lot of data to manage and analyze, and not all in-house equipment can store it. Cloud computing

Allows healthcare institutions to store all that data while avoiding extra cost of maintaining physical servers.

4. Scalability: Unlike conventional self-hosted models, cloud computing gives healthcare providers the flexibility to increase or decrease their data storage depending on the patients' flow. This way, healthcare institutions can adapt

Their technology to peak seasons—for example, the influenza season, wherever the amount of patients will increase—without wasting time and money with the advance hardware purchases or software system updates.

5. CONCLUSIONS

In this project, we tried to focus on how cloud computing can be used effectively in telemedicine to provide great

convenience for both the patients as well as the physicians. Medical communities that are separated by distance may benefit from these latest advances in telecommunication and knowledge technologies. Telemedicine is a method of providing health care services based on individual patient's information that can be viewed from images transmitted from distant areas. It's the procedure to deliver/receive clinical care and medical data anywhere, anytime within world. Telecare is may be a connected and refers to provision, at a distance of nursing and community support to a patient.

REFERENCES

- [1] Rolim C.O., Koch F.L., Westphall C.B., Werner J., Fracalossi A., Salvador G.S. "A Cloud computing solution for patient Data collection in Health care establishments,". Second International Conference on ehealth, telemedicine, and Social Medication, 2010. ETELEMED'10, pp.95-99, 10-16 Feb. 2010.
- [2] Kugean, C.; Krishnan, S.M.; Chutatape, O.; Swaminathan, S.; Srinivasan, N.; Wang, P. "Design of a mobile telemedicine system with wireless LAN," Asia-Pacific Conference on Circuits and Systems, 2002. APCCAS '02, vol.1, pp. 313-316, 2002.
- [3] Richard Wootton, Victor Patterson, "Introduction to Telemedicine", 2nd ed., published by the Royal Society Of Medicine Press Ltd., 2011
- [4] Alamri, A.; "Cloud-Based E-Health Multimedia Framework for Heterogeneous Network," International Conference on Multimedia and collection Workshops (ICMEW), IEEE, pp.447-452, 9-13 July 2012
- [5] Khalifehsoltani, S.N.; Gerami, M.R.; "E-health Challenges, Opportunities and Experiences of Developing Countries," International Conference on e-Education, e-Business, e-Management, and e-Learning, IC4E '10 IEEE proceeding, pp.264-268, 22-24 Jan. 2010.