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Provisioning Quality of Service of Wireless Telemedicine for E-health Services

Mustafa Almahdi Algaet, Zul Azri Bin Muhamad Noh, Abdul Samad Shibghatullah, Ali Ahmad Milad
Department of Computer system and Communication, Faculty of Information and Communication Technology,
Universiti Teknikal Malaysia Melaka. Hanng Tuha Jaya, 76100 Durian Tunggal, Melaka. Malaysia.

Abstract: **Telemedicine is not yet all worked out where it can be utilized constantly or flexibly. But, it has enormous potential to be a tremendous asset to the world and all its civilizations. Telemedicine has had a positive impact on some aspects of patient care. There is no arguing that the contributions it can make have endless possibilities however more time and effort will be needed to organize telemedicine for it to be confidently accepted. Asynchronous telemedicine does not require the simultaneous availability of the source and recipient of patient information. Telemedicine can be roughly characterized as either synchronous or asynchronous. Synchronous telemedicine involves caregivers acquiring and acting upon information about a remote patient in near real-time.**

Keywords: QoS , Telemedicine , e-Health

I. INTRODUCTION

A mobile telemedicine system that uses existing infrastructure, could remove many hurdles, dramatically expanding the reach of telemedicine as a clinical tool. Our research has focused on developing such a tool. Our system uses off-the-shelf hardware components and standard cellular network data connections, to provide reliable, high quality interactive video communication from moving vehicles. The heart of our system is a novel technology that adaptively and dynamically aggregates available wireless networks, intelligently encodes and distributes video over those networks, and degrades gracefully in the presence of network disruptions.

II. PROBLEM STATMENT

- Current mobile telemedicine communication cannot over quality of system guaranty which is critical technology in wireless telemedicine for e-health service
- Wireless telemedicine require stretch packet delivery reliability and the existing proposed scheme still can not cater the requirement
- Many of proposed scheme not been tested in real environment

III. ADVANTAGES

- A major advantage of telemedicine is avoiding the cost of unnecessary transportation.
- e-Health, as an inter-jurisdictional enterprise, presents risks to patient health data that involve not only technology and professional protocols but also laws, regulations and professional security cultures.

IV. OBJECTIVES

- To investigate the factor that affect performance of mobile wireless.
- To analysis exiting quality of service solution and propose new method to improve quality of service for wireless telemedicine.
- To test and analyzing the proposed scheme in real network environment.

V. SCOPE

- This work will be implemented over wireless networks. The wired networks are not addressed here.
- The work will be implemented over peer-to-peer network topology.

VI. LITERATURE REVIEW

Y. Yuan, D. Gu, W. Arbaugh and J. Zhang , proposed analysis and design a QoS ontology The QoS Ontology have been used to find the service to meet the QoS needs of users. After that, we add the QoS ontology into our discovery algorithm of web services.

H. Shang and Craig E. Wills , proposed can be used to support the automatic discovery of web services with QoS information. Considering the expressiveness of the knowledge representation languages, we choose OWL as the ontology modeling language, and we use the Protégé as ontology editing tools to develop a web service QoS ontology model.

- D.Gao and J.Cai , show that the 802.11e standard provides a very powerful platform for QoS supports in WLANs. They provide an extensive survey of recent advances in admission control algorithms/protocols in IEEE 802.11e
- WLANsHu et al. have proposed a mobile sensor network infrastructure to support the third-generation telemedicine applications which uses an energy-efficient query resolution mechanism in large-scale mobile sensor networks and provides the guaranteed mobile QoS for arriving multimedia calls.
- D.D.Vargos , he proposed several factors that should be taken into account for data delivery in wireless healthcare network:
  - Availability;
  - Confidentiality and privacy;

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• Data delivery latency;

• Reliability, QoS Provision and Mobility Support.

VI. EXISTING ARCHITECTURE

The Management provides the data to the health care domain.ie.Public

1. When the public receives the data they will give acknowledgement to the physicians.
2. Now the data from sender to receiver or to the receiver to the sender will be encrypted to store in the cloud server.
3. If the patient suffers heavy illness the doctors will check the previous treatment details for the present treatment.

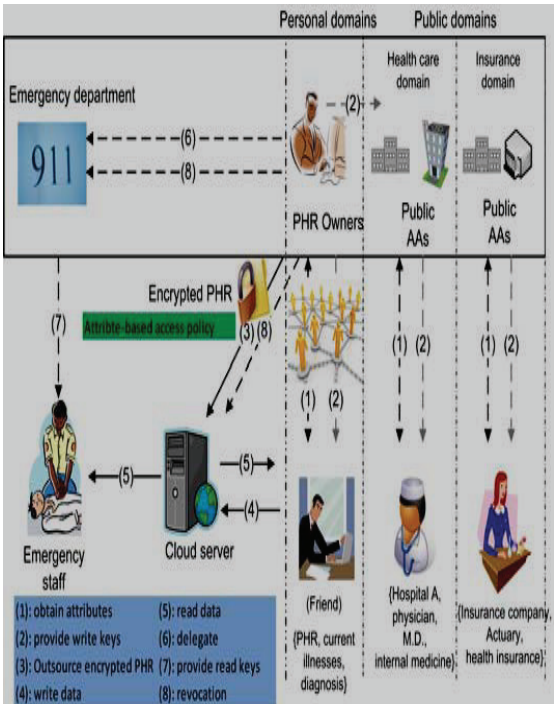

Figure 1 : existing architecture

VII. METHODOLGY

- The performance over wireless LANs has been addressed by many researchers, the main goal was to achieve a better throughput.
- Unlike the previous works, a QoS guaranteed services mechanism will be developed to achieve the system throughput comparing with previous related algorithms.
- In our work here we will design an algorithm to make optimal bandwidth to the frame then, system throughput by using concurrent transmission in mesh mode will be enhanced.
- It can improve the utilization of bandwidth while keeping the same QoS guaranteed services and introducing no extra delay.

VIII. NATURE OF TELE-MEDICINE

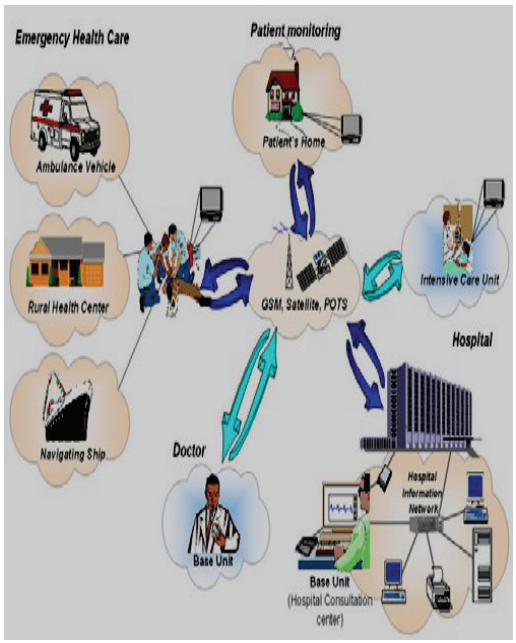

Figure 2: nature of telemedicine

In Proposed Architecture I have Emergency health care unit, Monitoring the patient details, Rural health center, Navigating ship details, Intensive care unit.

1. So These will help the patients for their treatments as early as possible without any delay.
2. This Architecture shows wireless medium that the data sends through GSM(Global System for Mobile Communications) or the Satellite.
3. If a people mets with an accident the information passes through GSM or the satellite to the Intensive care unit.
4. After the information the Intensive care unit sends the details to the doctors that they work in the base unit of Hospitals.
5. Then the doctor checks the signal where the accident happen and he/she will be attending the place to give a treatment to the patients.
6. So the advantage of this is patient no need to travel to the hospitals.
7. They can get the treatment with experienced doctors in the road-side.
8. That doctor will have a details of patients and h/she will be submit to the hospital for the future use.

IX. WORKING OF WIRELESS TO MOBILE DEVICES

1. This is Architecture for wireless services.
2. We have a wireless LAN as a communicating layer to pass the data via Internet cable modem to the hospitals.
3. We have to future enhancement to the Mobile devices like PDA, etc.

Figure 3: working of wireless to mobile devices

X. PROPOSED ARCHITECTURE

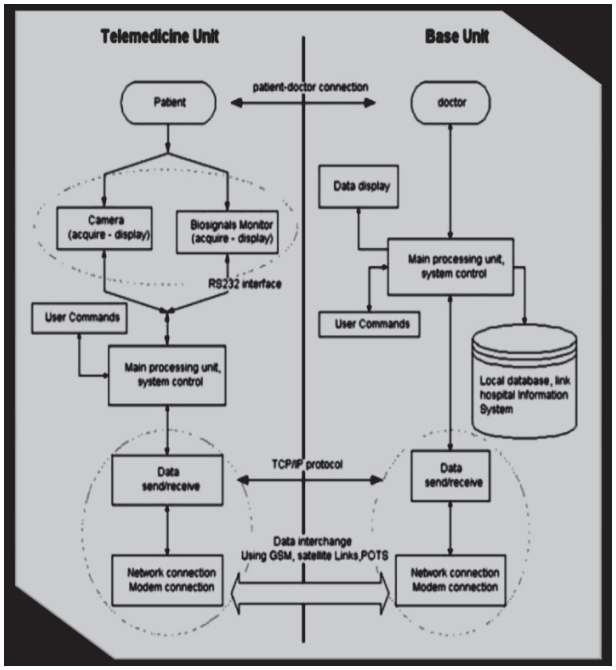

Figure 4: Architecture for Telemedicine and e-health services.

The Flow from the patient and the doctor.

1. If you check from the Patient, First its start with an Interface that the commands given by the patients through the camera or the signal.
2. Then the corresponding data sends to the doctor with the network connection via GSM, Satellite links .
3. The protocol used here is TCP/IP(Network layer).
4. The Flow from the Doctor checks the patients commands that displays in the monitor.
5. The patients data will be stored in the database in the form of hospital information system.

XI. SURVEY OF TELE-MEDICINE

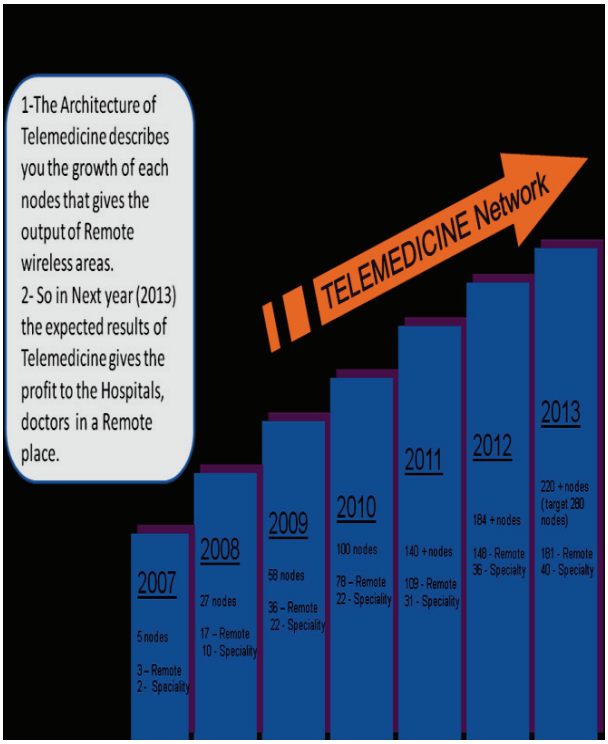

Figure 5: survey of telemedicine

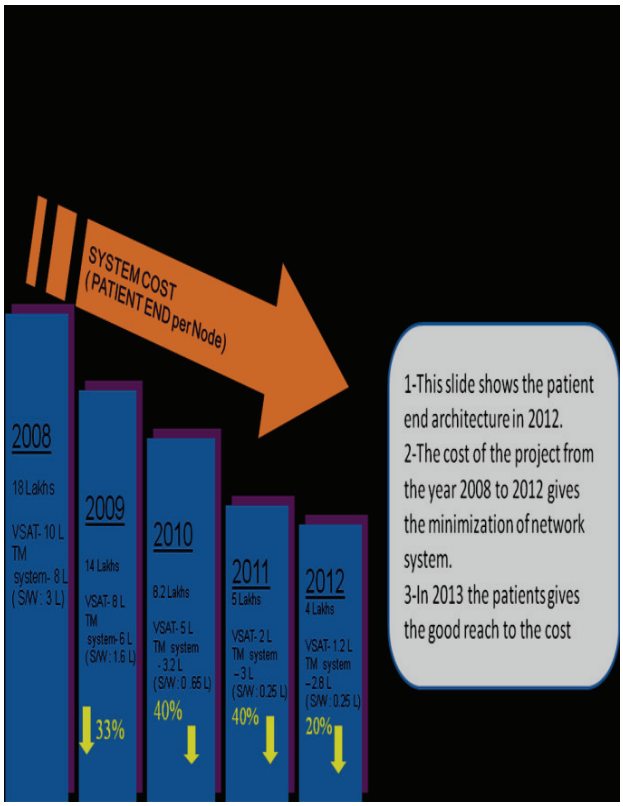

Figure 6 : minimizing the costs growth

XII. EXPECTED RESULTS

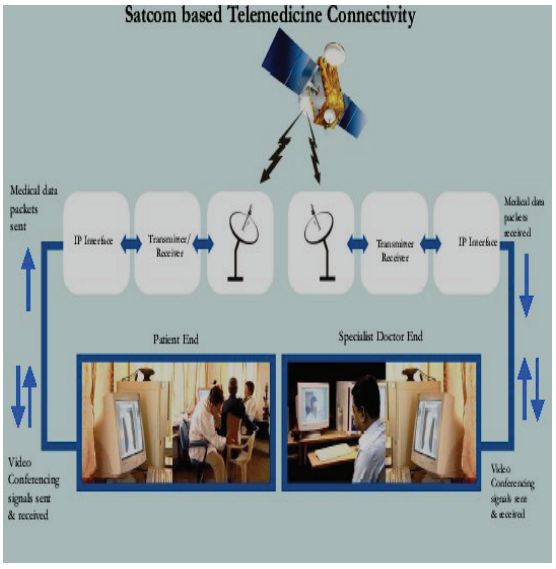

Figure 7: real expected output to the system.

1. There are two users to the system
   - Patients
   - Doctors
2. So from the architecture the patients sents the data through IP Interface to the Satellite via Transmitter.
3. The Satellite gives the data to the doctors via same IP Interface.
4. The Doctors will be accessing the data through Video conferencing and satellite signals.

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