

Network Technology Role in Healthcare System

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ABSTRACT:-

In the period of ten years, significant attention has been discussion of the Health care system. Even though there have been few related surveys about this subject. According to the general characteristics of varying distributed systems in Health care, this survey mainly categorizes and reviews on network technology in healthcare system will respect to the following aspects: 3G mobile WiFi, 2G, Worldwide Interoperability for Microwave Access (WiMAX). This paper aims that giving an overview of this area, evaluating the current status of the wireless networks can help in the healthcare field and medical field and envisioning possible in the future trends in this field.

Keywords:- Wireless Network, Network Technologies In Healthcare, Wireless links using Healthcare, Why Wireless Networks for Medical Field.

1. INTRODUCTION

The telecommunication networks are computer network or data network, which allows computers to exchange data. Networked computing devices exchange the data with each other using a data link in computer networks. In computer network, connections between the nodes are established by using cable media or wireless media. The best-known of the computer network is Internet.

In the network computer that originate devices that, route and terminate the data are called network nodes. In the hosts these network nodes can be include, Those hosts such as personal computers, phones, servers as well as networking hardware. Computer networks shows the differ in the transmission medium used to carry their signals and the protocols of communications to organize network traffic, topology, the network's size and organizational intent.

Computer networks support a large number of applications to access the World Wide Web, digital audio, printers, video, shared use of application and storage servers and fax machines, as well as many

others. In most cases, specific application of communications protocols are layered over other than more general communications protocols.

2. RELATED WORK

Robust Wireless Network using in the Healthcare Environment

Most of the industries as digital transformation are use to maximum advantage are expecting in these patient Healthcare. Healthcare organizations are delivering the new innovative patient care, streamlining connections between the patients and providers, and also improving collaboration among the colleagues by using capabilities of a robust wireless network through connected devices on the Internet of Things (IoT).

With the prolific of patients, healthcare professionals, visitors and administrative support in the hospital environments, it's very possible for network performance for the patients but, it to suffer due to the crush of thousands of devices are trying to get online. Wi-Fi-enabled devices are tablets, smart phones, and even wireless health devices are connected and operable in high density client environments when the Cisco's robust wireless network products are the Aironet 3800 Series Access Point and Aironet 2800 Series Access Point in feature Cisco's High Density Experience (HDX) are deployed.its robust wireless network is secure and fast connectivity it means patients can use their Wi-Fi-enabled devices to update social pages, and also read digital editions of their favorite magazines, even connect to the hospital entertainment networks.

3. WIRELESS LINKS USING HEALTHCARE

Wireless local area networks(LAN) use a high-frequency of radio technology similar to the digital cellular and a low-frequency radio technology. To enable the communication between multiple devices in a limited area these wireless LANs use spread the spectrum technology. IEEE 802.11 defines a most

common flavor is Wifi. Wifi is known as open-standards wireless radio-wave technology

There are the seven-layer OSI models in the computer networking, the physical layer or layer one was the lowest layer. The implementation of this physical layer is often termed PHY.

The physical layer or layer one consists of the basic networking hardware transmission technologies of a network. Layer one is a fundamental layer, the logical data structures of the higher level in the layer one functions in a network.

The physical layer means, transmitting raw bits rather than the logical data packets over a physical link connecting network nodes. The semantics of OSI network architecture, the physical layer or layer one translates logical communication requests. These request translates from the data link layer into the hardware-specific operations to affect reception of electronic or transmission signals.

Elements Of Wireless Network

The telecommunications network is physical layer. This telecommunications network has number of interconnected elements and wire line elements. Those are network elements (NEs) connections. These NEs are stand-alone systems. Wireless service are depends on the network elements in physical layer or layer 1 to be protected against of all operational environments and applications. Underline thing is, NEs are located on the cell tower. And this cell tower connect to the base station (BS) cabinet.

4. WHY WIRELESS NETWORKS FOR MEDICAL FIELD

Now a day's, wireless networks field is so advanced, newly innovative applications are improving in medical as well as healthcare field. In medical field most of the applications ranging from equipment for patient management are being developed. Most of the hospitals staff is increased by using some of newly innovative applications and tools. In healthcare field, most of the issues discussed in the realm of wireless networks such as long-term patient care, smart homes and support for elderly people. There is also research being in the process to creating teletrauma systems by using the wireless channel. While they are being moved to the trauma center, it will possibility to allow trauma specialist to be virtually patients on the bed sides.

In future, the homes can be designed that take healthcare of patients. A patient who is located remotely, for that patient can be communicating to caregivers with that remotely, it is easy for caregivers, to communicate with patient status in real-time. One more issue that concerns the healthcare field, it is that the medical devices are very large number of expensive. Tedious routines are involved in the translating results from one machine to another. By using Wireless Networks for Medical Applications this compatibility issue can be reduced.

In wireless networks field, the another hot issue is implantable devices. These implantable devices can be implanted on normal day to day wearables. Wireless sensor implanted is inserted inside the patient's body have their own significant benefits. And also patients can wear the sensors, it can monitor vital signs and also report them in realtime situations to their doctor.

This wireless technology helps towards the issue of access, why because now the patient maximum doesn't need to be near in the hospital area of all the time. And the quality of medical field also improve.

This technology uses in healthcare for patients. This technology access easily in healthcare. And also saves money for patients from care providers.

5. NETWORK TECHNOLOGIES IN MEDICAL & HEALTHCARE

In case of accessibility and mobility requirements in the wireless networks is the preferred medium in medical applications. Wireless technologies are being developed to give procedures and new machines to required in medical field

Wireless Technologies in Use - Current and Past

In this part we will talk about few recent and past technologies used in the a medical applications area based on the wireless networks.

WBAN (Wireless Body Area Network)

Body Area Networks (BANS), it is the sensor network. These sensor networks have the extremely low power requirements. It make them fit for integrating them in day to day wearable's. In this medical field, these unobtrusive devices are attached to patients bodies and collect vital health information such as Blood pressure, diabetes and ECG, etc.

RFID (Radio Frequency Identification)

Radio Frequency Identification (RFID) technology is a major topic in these days. To keep track of equipment this RFID tags are used in hospitals. RFID can also be planted on patients as well as doctors to know about the patients to the doctor at the time where they are. RFID does not need any battery power and thus it has potential uses in storage areas. That is extremely low powered radio devices. And also use for monitoring hospital supply stocks, so it can manage their resources properly as well as know in real-time status of their supplies.

3G

This 3rd generation mobile telecommunications network. 3G standards for mobile phones and mobile communications. And also able to deal with video and audio files for these devices. In the emergency medical cases the doctor can explain in audio and video. It has a potential transfer speed is high compare with 2G.

WPAN (Wireless Personal Area Network)

WPANs are using 802.15.4 or Bluetooth, it has potential uses in the medical fields. These are the short range networks that can be deployed, for example, in the hospital general ward room, nurses are able to monitor patients easily in real-time without having to visit them frequently. Bluetooth is good technology for the short range communication, for example, in home healthcare.

Wireless LAN (802.11)

Most of these days provide wireless LAN access at hospitals, universities and corporate offices. Transfer patient data around the hospital wireless LAN channels can be useful. By using this wireless channel, communication between medical devices is also made possible.

WiMAX

“Worldwide Interoperability for Microwave Access”.

For the fixed stations 1 Gbit/s. It easily communicates with others. WiMAX is a wireless device. WiMAX is the fourth generation wireless technology (4G) and it is able to cover a staggering radius of about 50 km. WiMAX provides 40-45 megabit-per-second data rates. This technology is

very useful in medical field.

6. CONCLUSION & FEATURE SCOPE

In this paper, we presented a research on the distributed system based on network technology role in healthcare system. By the survey reduce the time, space and cost by using distributed system based on network technologies, providing solution to handle different query issues with healthcare system. We talked about the benefits from these applications. And also how it can help with two of the main issues in the healthcare field which are access and cost.

We can develop the wireless network technology in the area of healthcare system as context-sensitive medicine, iRevive, patient homecare, and networks like LTE in future.

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