

Security Requirements for Future Body Sensor Networks

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Abstract— Security is first priority in Body Area sensor Network (BSN) as it contained personal health information like blood pressure & heartbeat. So Bio stats of a patient should be protected against attacks of intruders. In this research a simplified security model is presented for multiple BSN sensors. A novel and authentic key agreement between sensors and monitoring system (Gateway) has been proposed which is simple and resource efficient. It also fulfills the light weight requirement of security.

Keywords- Body Sensor Network; Session Key; Rekeying; light weight cryptography;

I. INTRODUCTION

Now a day patient health care is done using wired sensors that transmit physical condition like psychological data of the patient to a bedside monitor. The limitations of this setting, such as limited patient mobility, have encouraged research on wireless medical monitoring solutions, realizing the vision of the future wireless hospital. Patient monitoring in the future wireless hospital will be primarily enabled by BSNs. A BSN is a particular wireless ad hoc network composed of wireless sensors attached to a patient's body and, eventually, also of wireless medical devices in close vicinity. The wireless sensors measure and process patient vital sign data. Subsequently, the data is wirelessly transmitted to clinician PDAs or wireless medical monitors (WMMs) at the patient's vicinity.

II. BSN REQUIREMENT AS COMPARED TO WSN

Miniaturization and tiny devices development brought designing and development industry to create such devices that smaller in size, better processing capabilities, effective memory and architecture. Sensor development put world into new domain that all technological aspect and solution are junked with sensor's domain. Communication between these tiny devices made Wireless Sensor Network (WSN). The Permeative WSN has given birth to exciting new applications of several areas of our lives at a broad class level and health caring is one of life-sustaining area. The

key role of sensors in WSNs is; to gather ,process data and make necessary computation from the environment and at last to make active many applications like as support for logistics, habitat monitoring, military operations, health care as well as emergency response. Talking to hardware availability WSN is heterogeneous or homogenous. Furthermore, WSN classified as hierarchical or distributed roles. The study of WSN has a continuous research interest due to large potential for integrating the computing power of smart devices into everyday's life. In WSN, data is transmitted over air so many application needs employment of security measures. Due to different demand and application, sensors designed and developed as per requirements. From last few years the sensors and tiny chips are needed too much in medical area. S in medical area patient is focal entity so requirements of sensors architecture directly concern with human body. Human body have distinct characters, properties and dynamic behavior so designing, development and deployment of sensor in this prospective should need special attentions and features. Therefore, miniaturization, lightweight, cost reduction and wearable sensors require in health care system. When these sensors deployed on patient, hospital monitoring system or in medical care units they form a Wireless Area Network (WAN) and when special on a human body attached these tiny devices then formally called Body Sensor Network (BSN). In BSN sensors used in, on, near or as required to human body in such a way that they gather data, process data, communicate with each other and process indication if integration required and communicate with Base Station (BS). Different architectural setup proposed in BSN to perform communication system however mainly it consists three parts. Sensors on patient body performing separate network, high memory and processor units called base stations and external network that also contain medical servers. Body sensors placed on patient body just on the body stitching, wearing or hanging them or inside body through surgery or as for monitoring purpose and requirement. These sensors are design for special purpose due to the sensitivity of human body i.e. Heat, Blood Pressure, Sudden react and also side effect of artificial devices to body tissues. Body sensors communicate with BS updating their information. Base station that is mostly high

