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Modified Implementation of Different Architectural Designing Issues in WSN Protocol

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Abstract: ***In real life wireless sensor network has much variety of applications in Microelectronics as well as embedded systems. Life time and overall performance of the network is affected by issue power consumption so it becomes major issue in the wireless sensor network. Efficient data Collection techniques and efficient routing protocol can be designed in order to minimize the energy consumption. The differences between sensor networks and ad-hoc networks are as follows a) Sensor nodes mainly use broadcast communication whereas ad-hoc network uses point to point communication. b) The physical arrangements of sensor nodes within a network can be changed due to mobility. c) Sensor nodes may not have global identification because of the large amount of overhead and large number of sensors. d) The total number of mobile nodes within a adhoc network can have different orders of magnitude much lesser than the ordering magnitude of sensor nodes in a sensor network. In this paper, we can propose a survey result and analysis of different designing issues of WSN protocols. In first part of this proposed work we can highlight different activities of mobile Sensor nodes within a wireless Sensor Networks w.r.t Second part of our work basically explains different designing issues of sensor networks and there implications on data routing.***
Keywords: WSN, Sensor, adhoc, protocols, global identification.

I. INTRODUCTION

When a transmitted node can be able to transmit information with the help of wireless medium to the receiving sink node and that receiving node can be able to sense that information within that sensor network called wireless sensor network. Each node in that aforesaid network is responsible for information sensing, after sensing information processing can takes place and finally sensed data are transmitted from transmitting end to receiving end. Data transmission takes place over the wireless sensor network in two way first, the information from transmitter can be directly sent to the receiver sink node, whereas secondly the information can be transmitted with the help of router. There are different Types of sensor networks exists in real life like Mobile Wireless sensor network ,Terrestrial Wireless sensor network, Wireless sensor network which can be able to work under the ground as well as water, Multimedia Wireless sensor network etc. During the analysis of different issues like efficiency and reliability of the wireless sensor network we have to consider different issues based on the design, architecture and applications. Senor nodes are usually distributed in a sensor field as shown in figure1.

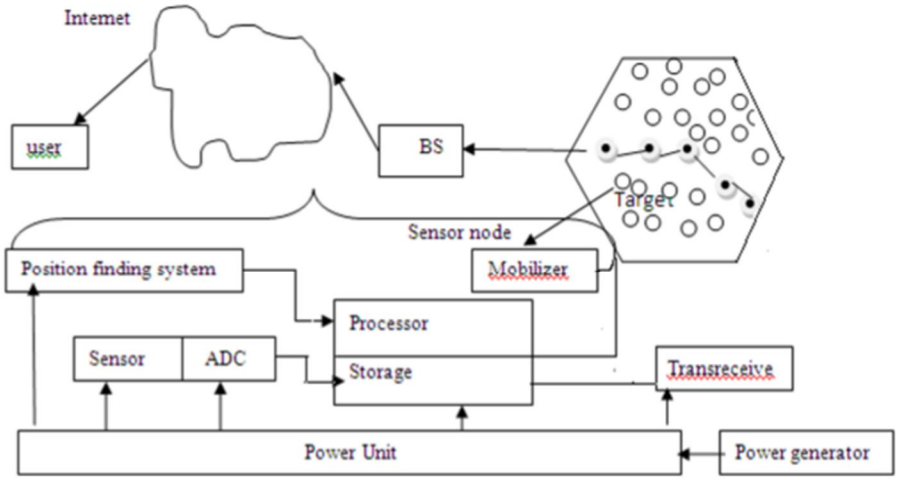

Figure1. Sensor nodes scattered in a sensor field and components of a sensor node

All individual distributed nodes can receive data and transmit that data back to the receiver as well as the end users.Data can be

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reversely forwarded to the end user with the help of multihopping through the receiver. The protocol stack can be able to integrate data with networking protocols and communicates power efficiency through the wire les s medium. The protocol s tack consists of basic layers, power management plane, mobility management plane and task management plane. The Transport layer helps to maintain the flow of data if the sensor networks application requires it. The network layer takes care of routing the data supplied by the transport layer. Since the environment is noisy and sensor nodes can be mobile, the MAC protocol must be power aware and able to minimize collision with neighbors broadcast.

II. PROPOSED ISSUES IN WIRELESS SENSOR NETWORK

The wireless sensor network is smaller in size and having limited memory, computation and battery power. Different issues of wireless sensor network designing are discussed as:

A. Energy Related Issue

Energy consumption is the amount of energy or power used. It is very important in Wireless sensor network which determines the longevity of the network. Battery power is the main energy source of this network. The energy consumption of Wireless sensor network depends upon

1) Information sensing within sensor nodes of a network.
2) Data Communication between transmitter and sink node inside the network
3) Data processing by each sensor nodes inside the network.

During the communication the various routing protocols should be used at each layer in order to control energy consumption.

B. Position Based Issue

The solution of determining the position in Wireless Sensor network of different sensor nodes is called localization. The problem can be solved by:

1) *GPS (Global Positioning System):* A network of satellites that provide a time signal that can be correlated to determine a exact physical location where as A wireless sensor network is a collection of sensors connected wirelessly.
2) *Beacon Nodes:* A beacon is an intentionally conspicuous device designed to attract attention to a specific location. After completion of deployment, a beacon travels around the sensor network at the time of broadcasting beacon packets. A beacon packet indicates the position coordinates of the beacon.
3) *Proximity Based Localization:* Proximity is determined by whether or not a receiver can demodulate and decode a packet sent by a transmitter. The proximity carries considerable information regarding sensor location in a binary variable.
4) *Radio Interfermetric Positioning System:* Radio interferometric positioning exploits interfering radio waves emitted from two locations at slightly different frequencies to obtain the necessary ranging information for localization.

C. Physical Arrangement Based Issue

1) *Pre-Deployment Phase:* In A pre-deployment phase that enables the manual placement of each nodes by user, or launching them from a surface. The third phase is the redeployment which consists in adding new nodes to the network to replace some broken down or damaged nodes.
2) *Post Deployment Phase:* It is necessary if topology has been evolved due to node displacement or changing the conditions of radio propagation.
3) Redeployed poses need to re-arrange the network.

D. Area of Coverage based Issue

Coverage is a typical issue to measure the quality of service in a sensor network; It indicates each point in the region is covered and how accurate is the sensing data collected by the sensor nodes. Maximizing coverage as well as maintaining network connectivity is essential of any sensor networks. Therefore different efficient protocol like Coverage Configuration Protocol is being introduced.

E. Sensed Data Transmission

During radio transmission how does the sensed data transferred by the sensor node is delivered to sink node is actually discussed here

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F. Clock Synchronizing Issue

Synchronize the clocks of all sensor nodes of a subset of nodes to one reference clock. Clocks should be synchronized in monitoring, tracking and also saving energy.

G. Computing Issues

Data computation is needed to minimize the use of resources. data is distributed throughout the nodes inside the sensor network and collected by master station with low communication costs.

H. Data Collection based Issue

Data collection is done by collecting the data from different sensors by removing the redundant data. Data must be delivered to sink node without any information hiding as well as loss. Sensors node transmit as well as forward data packets throughout the network and energy consumption takes place.

I. Query Processing & Scheduling Issues

By collecting the query information from receiver node other sensor nodes can be able to answering that query by processing with essential data parameters. The storage node stores the information query after processing. Scheduling determines the time slot of the sensor node with sleep, active or on standby mode within a network.

J. Reliability based Issue

1) *Packet Reliability:* It requires Information from all the sensor nodes to reach the sink node inside the network that can result in depletion of sensors as energy resources.
2) *Event Reliability:* It requires Information of successful event detection and not successful transmission of all packets.
3) *Destination Related Reliability:* It confirms the transmitter and sink node identification inside the network.

K. Security Based Issue on Application layer

In this layer Data collection, arrangement with management is done with the help of application software. This layer ensures that when sink collects from sensor node no malicious node is allowed to interfere.

1) *Network Dynamics based Issue:*Stationary based sensor nodes are responsible to transmit as well as receive query messages within other sensor nodes or sink nodes within the network with the help of two issues, one is static event and another one is dynamic event. Static event monitoring allows the network to work in a reactive mode by generating traffic when reporting whereas Dynamic events require periodic reporting and consequently generate significant traffic to be routed to the Base Sensor node with in network.
2) *Node Deployment based Issue:* According to the deployment-deterministic model the sensor nodes inside wireless sensor networks are manually placed and information query is properly routed after query processing through custom pre-determined paths. Whereas self-deployment model describes about multiple as well as scattered sensor nodes within network are randomly generates it's clone.
3) *Energy Consideration based Issue:* When a fixed base sensor node is located away from other sensor nodes inside the network then the sensor nodes are energy constrained with uniform initial energy allocation where each individual sensor senses the medium at a fixed rate and always has data to send to the base sensing node. The base sensor nodes are not assured it's node mobility. The network is homogeneous as well as location unaware, and all the nodes are equivalent, i.e., they have the same computing and communication capacity.
4) *Data Delivery Model based Issue:* An event-driven concept is designed to find out any paths instead of the shortest path from an source to the sink. A protocol is designed to combine query flooding and event flooding concept to find out the route and the query information transferred to the nodes which detect an event rather than flooding the entire network. When a node found an event, it creates a message and transmits into a random path. Query Driven Model provides efficient data delivery to multiple mobile sinks by assuming the sensor nodes are stationary and location independent.

III. CONCLUSION

Wireless Sensor Networks (WSN) is an interconnection of a large number of nodes deployed for monitoring the system by means of

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measurement of its parameters. Recent research in wireless sensor networks has focused on to various new protocols which are particularly designed for sensor networks. In our proposed work we can elaborately discuss and analyze various kind of designing issues to form effective power consumption based Wireless sensor networks and also discuss about their effective designing criteria of various protocol on behalf of WSN environment. There are so many issues still exist and there are still many challenges that need to be solved in the sensor networks . The following parts describe some of those issues and challenges : a) How to effectively utilize the bandwidth and energy for energy application.b) To make sensor nodes self- organizing and self-reconfigurable. c) To make routing protocols secure in WSNs . d) To satisfy dense sensor networks with a large number of nodes .

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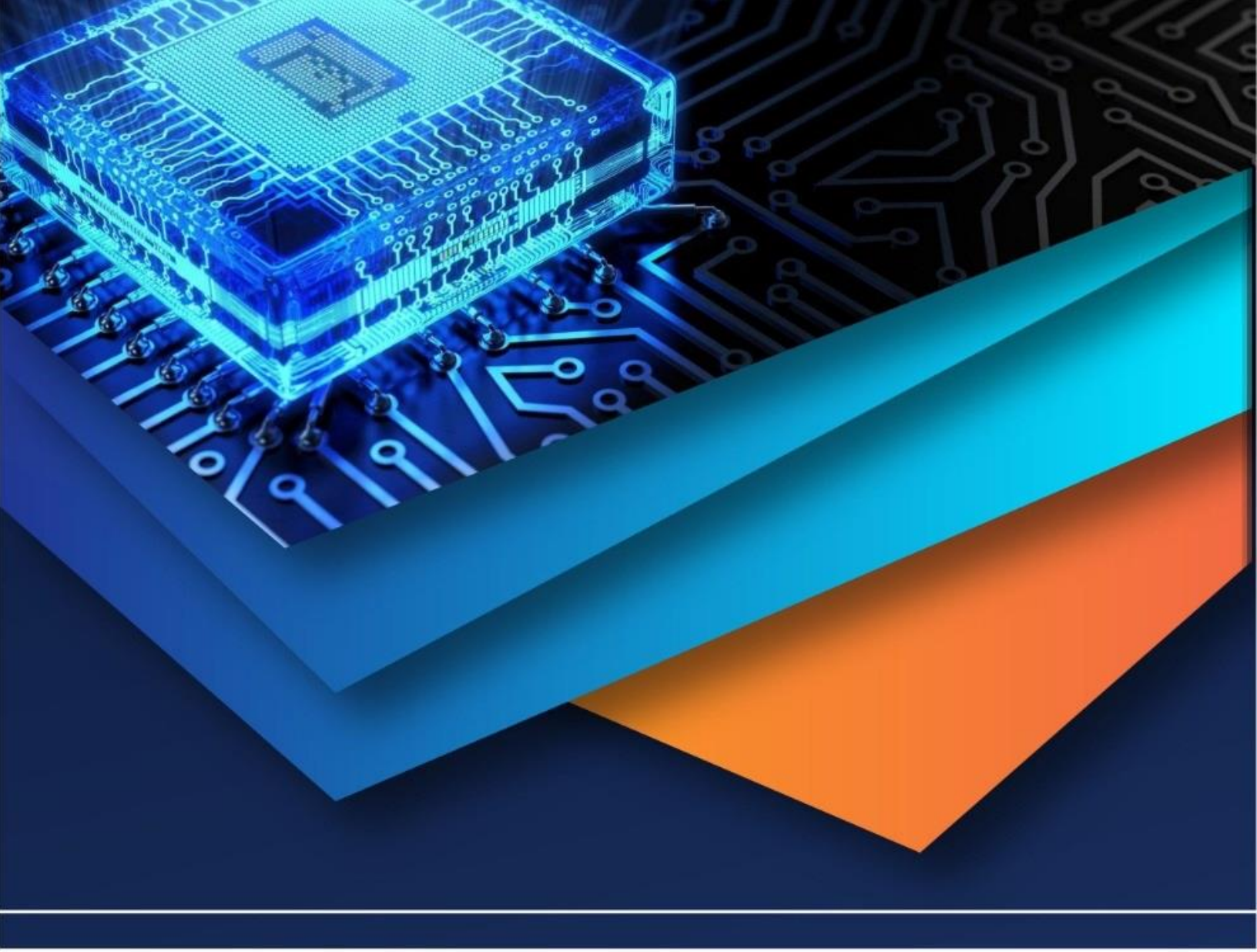

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