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A SURVEY ON ACHIEVING NETWORK LIFETIME MAXIMIZATION AND SECURITY IN WIRELESS SENSOR NETWORK

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***ABSTRACT* - The Lifetime optimization and security are two complexity designs in multi-hop wireless sensor networks. The proposed system is used to design a cost efficient methodology for a secure routing. The proposed work implement a novel methodology namely Energy Balance Control (EBC). The energy balance control and also it supports for dynamic walking strategies. Here the energy of the neighboring node is monitored by the source node. By analyzing the energy of the neighboring node in the wireless sensor network, the next step is to form a grid in the WSN. Based on the node in the grid the routing is established between the source nodes to the sink (destination). The proposed CASER protocol can provide an excellent tradeoff between routing efficiency and energy balance. And can significantly extend the lifetime of the sensor networks in all scenarios. The protocol that generated is vulnerable for traceback attack. It can be enhanced by implementing robust routing protocol namely TEEN (Threshold Sensitive Energy Efficient Sensor Network Protocol). The TEEN is a sensing protocol that efficiently overcomes the routing traceback attack. The energy deployment is also considerably reduced. Energy life time is maintained. Along with Energy balance Control with TEEN routing will cooperatively act together to overcome the drawbacks in the proposed mechanism.**

***Keywords* - Wireless sensor network, TEEN protocol, lifetime optimization, energy consumption, security.**

I INTRODUCTION

Wireless sensor networks (WSNs) technically and economically feasible to be widely used in both military and civilian applications, such as monitoring of ambient conditions related to the environment, precious species and critical infrastructures. A key feature of such networks is that each network consists of a large number of unattended sensor nodes. The
routing is another very challenging design issue for WSNs. A properly designed routing protocol should not only ensure high message delivery ratio and low energy consumption for message delivery, also balance the entire wireless sensor network energy consumption, and there by extend the sensor network lifetime. Motivated by the fact that WSNs routing is often geography-based propose a geography-based secure and efficient Cost-Aware SEcure routing (CASER) protocol for WSNs without relying on flooding. CASER allows messages to be transmitted using two routing strategies, random walking and deterministic routing, in the same framework.The distribution of these two strategies is determined by the specific security requirements.

Wireless sensor networks are expected to find wide applicability and increasing deployment in the near future. In this paper, we propose a formal classification of sensor networks, based on their mode of functioning, as proactive and reactive networks. Reactive networks, as opposed to passive data collecting proactive networks, respond immediately to changes in the relevant parameters of interest. We also introduce a new energy efficient protocol, TEEN (**T**hreshold sensitive **E**nergy **E**fficient sensor **N**etwork protocol) for reactive networks. We evaluate the performance of our protocol for a simple temperature sensing application. In terms of energy efficiency, our protocol has been observed to outperform existing conventional sensor network protocols.

II EXISTING SYSTEM

The data that is used for the secure transmission is energy balancing. Thus development of the proposed scheme is used for the energy balancing and for secure transmission. A secure and efficient Cost Aware Secure Routing (CASER) protocol is used to address energy balance and routing security concurrently in WSNs. In CASER routing protocol, each sensor node needs to maintain the energy levels of its immediate adjacent neighboring grids in addition to their relative locations. Using this information, each sensor node can create varying filters based on the expected design tradeoff between security and efficiency. The quantitative security analysis demonstrates the proposed algorithm can protect the source location information from the adversaries. In this project, we will focus on two routing strategies for message forwarding: shortest path message forwarding, and secure message forwarding through random walking to create routing path unpredictability for source privacy and jamming prevention.

III PROPOSED SYSTEM

Classification of sensor networks with respect to mode of functioning

- Proactive networks
- Reactive networks

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Proactive networks, respond immediately to changes in the relevant parameters of interest. TEEN (**Threshold** sensitive **Energy Efficient sensor Network protocol) is for reactive** networks. Teen protocol is for a simple temperature sensing applications. The nodes sense their environment constantly. The sensed values can be stored in an internal variable in the node that is called Sensed Value(SV). After calculating the energy balanced control on each hop node a secure file. The transmission line is trustworthy till the sink node. Thus the time for calculating the process is also become simple in this model.

IV SYSTEM OVERVIEW

The Energy Balance Control (EBC) is the one of the problem in wireless sensor network. Here we discuss about the EBC and TEEN protocol.

A. *Energy Balance Control (EBC)*

To balance the overall sensor network energy consumption in all grids by controlling energy spending from sensor nodes with low energy levels. The source node, send the message to neighboring nodes, then move to the next neighboring node.

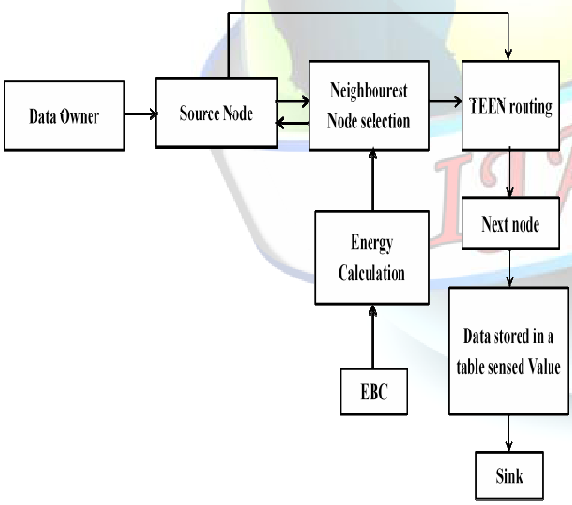

Fig 1.System Overview

The Fig 1 shows that, the data is send the source node to destination node based on the neighbourest node selection. The EBC is the Energy Balance Control, it is used to calculate the energy. The energy is calculating based on the EBC algorithm. First select the neighbouring node for message forwarding. If the node is has the highest node means select that node. The sink node has the information about all the node, that information are stored to the sink node. The source node, send the message to neighboring nodes, then move to the next neighboring node. Finally the message is send to sink node. In wireless sensor network, sink node has the all node information. The EBC method is used to calculate the energy for the sensor node.

V MODULES DESCRIPTION

There are three modules:

1. Shortest path Allocation
2. Energy Balance Routing
3. Secure Routing Using TEEN Protocol
4. Data Transmission

A. Shortest path Allocation

The network is normally deployed with number of sensor nodes .The network is divided into two or more equal size sections. The number of the sensor node is determined by the size of the grid. The number of sensor nodes in each grid follows id. When the number of sensor nodes in each grid is large. The sum of the energy in each grid should follow the normal distribution according to the central limit theorem. In our proposed dynamic routing algorithm, the next forwarding node is selected based on the routing protocol. The message is forwarding node based on the neighboring node selection and estimate the distance.

B. Energy Balance Routing

The selection of the neighboring node selection the energy level of each node to be consider. To achieve the energy balance, monitor and control the energy consumption for the nodes with relatively low energy levels. To select the grids with relatively higher remaining energy levels for message forwarding. For this a parameter α, $\alpha \epsilon [0,1]$ to enforce the degree of the energy balance control. It can be easily seen that a larger a corresponds to a better EBC. It is also clear that increasing of a main they also increase the routing length It can effectively control energy consumption from the nodes with energy levels lower than $\alpha\ \epsilon_\alpha$(A).

The TEEN path selection algorithm is derivate by the equation,

$$\boldsymbol{\varepsilon_\alpha}(\mathbf{A}) = \frac{1}{|NA|}\sum_{i \in NA} \boldsymbol{\varepsilon ri}$$

Here ε is an parameter used for the Energy Balanced Control. And then the term α is used to denoted challenging ratio. If the α value is maximum means there is no shortest path in that node.

C. Secure Routing Using TEEN Protocol

It is an secure routing protocol. Supported in wireless sensor network. The main use of this routing

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protocol is used to avoid the congestion. TEEN protocol used limited forwarding energy mechanism. After calculating the energy based control on each hop node a secure file. The transmission line is trustworthy till the sink node. Thus the time for calculating the process is also become simple in this model. The TEEN protocol is used to avoid the traceback attack. Christo Ananth et al. [7] discussed about Reconstruction of Objects with VSN. By this object reconstruction with feature distribution scheme, efficient processing has to be done on the images received from nodes to reconstruct the image and respond to user query. Object matching methods form the foundation of many state- of-the-art algorithms. Therefore, this feature distribution scheme can be directly applied to several state-of- the-art matching methods with little or no adaptation. The future challenge lies in mapping state-of-the-art matching and reconstruction methods to such a distributed framework. The reconstructed scenes can be converted into a video file format to be displayed as a video, when the user submits the query. This work can be brought into real time by implementing the code on the server side/mobile phone and communicate with several nodes to collect images/objects. This work can be tested in real time with user query results.

D. Data Transmission

After setting the coding is used to maintain under the reference of the basic performance. Computing Energy Balanced and routing process the data that are used to maintain energy balancing operation. Thus exhausting the energy in each node it should be reduced by using this implementation

VI ALGORITHM

A. Energy Balance Control Algorithm

The energy Balance Control algorithm shows, pointed out that the EBC parameter a can be configured in the message level, or in the node level based on the application scenario and the preference. When a increases from 0 to 1, more and more sensor nodes with relatively low energy levels will be excluded from the active routing selection. Therefore, the N_A^αshrinks as a increases. In other words, as a increases, the routing flexibility may reduce. As a result, the overall routing hops may increase. But since ε_a(A) is defined as the average energy level of the nodes in N_A, this subset is dynamic and will never be empty. Therefore, the next hop grid can always be selected from N_A^α .

```
begin
initialize A node
set of its adjacent neighboring grids as        NA
the remaining energy of grid i as
a parameter       [0,1]                  εri
else        α ∈
α increases from 0 to 1
end
```

VII RELATED WORK

In this paper, for the first time, we propose a secure and efficient TEEN protocol that can address energy balance and routing security in WSNs. In TEEN protocol, each sensor node needs to maintain the energy levels of its immediate adjacent neighboring grids and their relative locations. Using this information, each sensor node can create varying filters based on the expected design tradeoff between security and efficiency. The quantitative security analysis demonstrates the proposed algorithm can protect the source location information from the adversaries. Our extensive simulation results show that TEEN protocol can provide excellent energy balance and routing security.

VII CONCLUSION

In this paper, we presented a secure and efficient protocol for WSNs to balance the energy consumption and increase network lifetime. TEEN protocol is support multiple routing strategies in message forwarding to extend the lifetime and increasing routing security. Both theoretical analysis and simulation results provide that TEEN has an excellent routing performance in terms of energy balance and routing path security. The TEEN protocol is used to avoid the traceback attack.

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