Energy Optimized RAPT MAC Protocol for Wireless Sensor Networks

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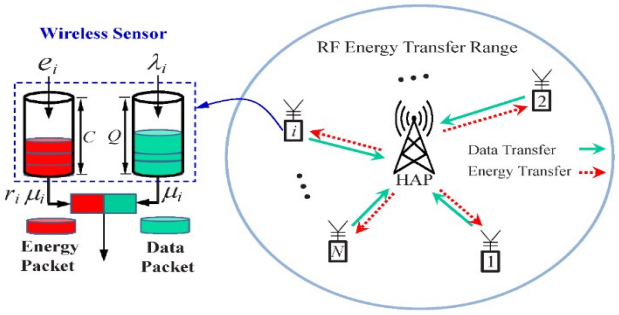
ABSTRACT - Wireless Sensor Networks (WSNs) are made of several autonomous sensor nodes that monitor an environment and gather the data to a main location. A promising technology to extend the lifetime of WSNs is to allow each node to harvest energy directly from its environment. The wireless sensor network are great demands for lower efficient and lesser improvement techniques to reduce test cost effective caused by increase in density. It utilizes large numbers of sensor nodes to perform close-range sensing data uses many to one network structure. Packet Transmission Speed low accurate fault location is an important challenge in energy systems. It is one of the aspects having a major impact on the quality of energy service, in term of duration of interruption, when permanent faults occur. The wireless sensor network are great demands for lower efficient and lesser improvement techniques to reduce test cost effective caused by increase in density. In This study, will be chosen Rapid Packet Transmission (RAPT). The combination of location-based and time reservation-based methods ensures high delivery and lower end-to-end delay avoid of packet delivery. This resulted in farther nodes having lower reservation ratio. It is expected from the proposed scheme to yield reduce in redundancy by reducing packet drops which resulted from packet collisions and channel fading, hence increase successful delivery rate.

I. INTRODUCTION

The wireless sensor network are great demands for lower efficient and lesser improvement techniques to reduce test cost effective caused by increase in density. Packet Transmission Speed low accurate fault location is an important challenge in energy systems. It is one of the aspects having a major impact on the quality of energy service, in term of duration of interruption, when permanent faults occur. Therefore, significant research is realized in the field of low accuracy and methodologies, working dependently of the presence of active sources in the network. Packet Transmission speed slow High cost of packet transmission Low efficiency in this process slow improvement Low Accuracy Not find location.



Interference is the major limiting factor in the performance of wireless sensor networks. The main dilemma that the transmitter faces is when the interference is very large, the packets the destination received will be affected by the interference. Like control the packet transmission as the following, when the transmitter observes high interference in the channel, that is the signal-to-interference ratio (SIR) is less than a threshold, it would be better to back off, buffer the traffic and wait for the interference to subside before it transmits. As it has backed off, the buffer is filling up with new packet arrivals and delay rises. By analyzing the influence of SIR threshold selection on the network performance, know the SIR threshold could be a key factor. Realize the wireless model and choose three difference SIR thresholds to compare the performance. Simulation results show the SIR threshold will manage the tradeoff between the delay and energy performance.

Therefore, our primary interest lies in how to decide the SIR threshold and our goal is to optimize the value of the SIR threshold and such that energy efficiency and delay-aware could be achieved. We analyze the performance of delay and energy according to different SIR threshold. The SIR threshold will keep changing according to network performance. We define a coherent time, a certain period of time. During this coherent time, the SIR threshold is used for packet transmission. After this time, adaptively adjust the SIR threshold by FLS again

basing on current average delay and distance of a node to the source node. By applying the optimized mechanism to the management of the SIR threshold, a better delay and energy consumption performances are achieved.

With the continuous expansion of power grid scale, transmission line distribution is more and more widely distributed. In order to maintain the normal operation of transmission lines, it is necessary to establish a real-time monitoring network of high performance transmission lines. Although the flexibility of WSN is good, since the group of strong, small size, and distribution on the transmission network, sensor nodes can monitoring the running state of the transmission line for a long time, but it makes the distribution of sensor nodes are long chains of radiation, data transfer volume increase, coupled with the interference of environment, the instability of sending and receiving nodes increases, the higher performance of WSN is required to monitor the reliability of the transmission line.

For improving the long chain tree of WSN quality of service (QoS), using a cloud genetic ant colony algorithm for wireless sensor network routing optimization, will delay, hop, the information such as link quality, queue length as a cross-layer routing optimization path measurement parameters, can well meet the requirements of wireless sensor network real-time and reliability. Considering the hop path loss and energy loss, and put forward a kind of reliable WSN routing method for distribution network fault detection, its business and reasonable adjustment according to the distribution network fault detection to assign weights for reliability and the proportion of sexual energy consumption, improve the reliability of this method at the same time effectively reduce the energy consumption and is suitable for distribution network fault detection scenario, but in power distribution lines and transmission line scenario, there are still certain difference between the method is not good.

II. RELATED WORK

Therefore, in order to provide connectivity, new alternate program completely small infrastructure, the second type of communications called mobile ad hoc network with the self-assembly and extensibility (MANETS), the has led many more It has attracted attention [1]. Receiver, only the receiver, the source of the third party, the message can verify the expected message cannot be established evidence that expected that sent the message, and the source of [2] Deny Authentication Protocol It is equipped with two important characteristics. In the agreement, it will not show it to be used to authenticate the voters in the electronic voting system [3]. However, these are in order to develop an authentication protocol, uses a public key infrastructure (PKI) [4].

The main advantage is, without any infrastructure and / or outside help, when needed, is that it is possible to realize up of such a network [5]. This is, there is always a self-configuring wireless device with more and more users are connected to powerful features, it has to be able to connect almost anywhere seamless, and feature-rich [6]. With the help of wireless ad-hoc network, by eliminating the need for centralized management, it will be to its transmission range of most anywhere node in order to achieve the freedom of between groups of wireless networks [7]. This is a disaster / disaster recovery, wireless ad hoc network, meeting, at the location of sensitive data exchange and Internet service non-infrastructure, accumulation of data, such as disadvantaged realized from the region and other potential future applications, in a variety of applications it can be used, because of its simple deployment characteristics. However, it has some problems [8].

Each node in the WSNs is authenticated by providing a digital certificate and an attempt to ensure the participation equal to network activity [9]. Based on the smart contract, the network manages the parameters of the smart contract is divided into parts of the two portions - one part managing the smart contract parameters and the other part involve in usual data communication [10]. This is because, in the ad-hoc environment, is an important agreement for the purpose of using a symmetric encryption / decryption. Public-key cryptography, also to encapsulate, to use as an envelope, it can negotiate a symmetric key between different nodes / participants [11]. One of the most reliable, depending on its faithful MANETs nodes are divided into disjoint clusters with between single-hop neighbors become cluster head, internal node "active trust model is used for its reliability calculation [12].

At the Open WSN, on the other hand, different mobile node, thereby ensuring global connectivity, has a variety of goals for sharing resources. MANETs is, there are two types of network, one is a single hop, and the other is a multi-hop [13]. There are cases where direct or indirect communication between nodes is present. All of the nodes in the single-hop network is within the same range, which is referred to as a direct communication, it can communicate directly. Node in multi-hop network rely on neighbors to communicate beyond the transmission range called indirect communication [14]. If cooperation is to all of the nodes transmit data to each other, propagation trust in the network depends on whether or not the communication with each other is normal [15].

III. IMPLEMENTATION OF PROPOSED METHOD

Packet losses avoid both in low node and high node density, resulted from packet drops. However, if there is more than one node receiving lowest duplicate packets, then the nodes' distances from the border will be compared and the node nearest to the border will be chosen Rapid Packet Transmission (RAPT). It cannot be used in high-speed communication as it is designed for low-speed application. It is quite expensive to build such a network. WSN has limited computation and communication resources. It is prone to security threat. Duration of Interruption Low Efficient and Lesser Improvement Cost Effective by Low Density Packet Transmission is Low WSN has limited computation of existing system This resulted in farther nodes having lower reservation ratio. It is expected from the proposed scheme to yield reduce in redundancy by reducing packet drops which resulted from packet collisions and channel fading, hence increase successful delivery rate.

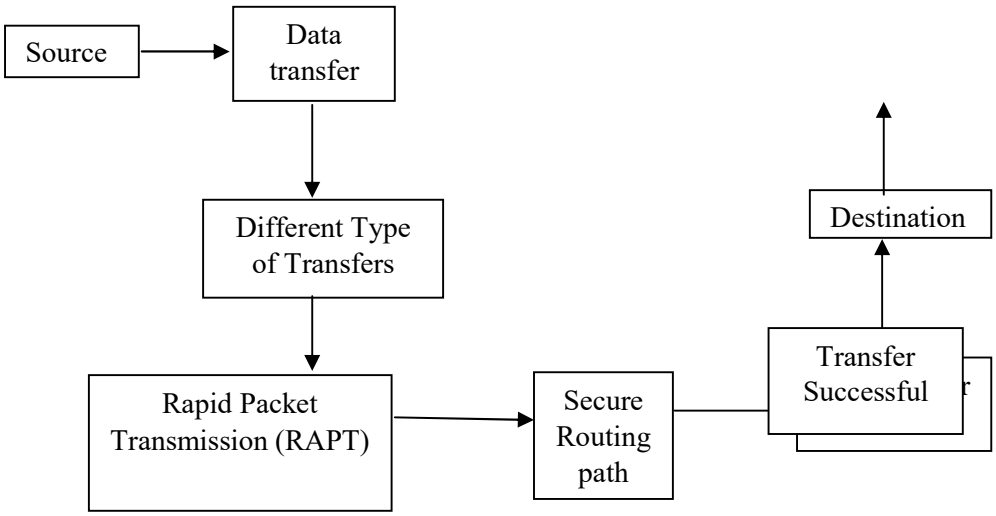


Fig 1.3 Proposed Diagram

The combination of location-based and time reservation-based methods ensures high delivery and lower end-to-end delay avoid of packet delivery. Packet Transmission Speed low accurate fault location is an important challenge in energy systems. It is one of the aspects having a major impact on the quality of energy service, in term of duration of interruption, when permanent faults occur. The wireless sensor network are great demands for lower efficient and lesser improvement techniques to reduce test cost effective caused by Low Density. Packet losses avoid in low node and high node density High delivery of packet delivery Lower end-to-end delay avoid of packet delivery Increase successful delivery rate.

3.1 Rapid Packet Transmission (RAPT)

Which actually rarely occur. However, in a situation under a large-scale disaster, it will be difficult to guarantee the network quality and the network traffic become unpredictable. The goal is to develop a method for application to be used in a severe situation. Data Rapid Packet Transmission (RAPT)Target Data loss rate of method is around, which can be occur when the network is almost down extracted frame-by-frame, and then the quantized parameters are packed into a Data.

The simplest and most common form applied in these systems is by using three-times data replication schemes. The more redundancy is used, the more fault-tolerant the RAPT becomes. But the redundancy increases the overheads of the storage infrastructure. The problem of secure and fault-tolerant communication in the presence of adversaries across a multichip wireless network with frequently changing topology. To effectively cope with arbitrary malicious disruption of data transmissions.

IV. RESULT AND DISCUSSION

Based WSN simulation, the program can be achieved In order to ensure data integrity attack, all of the participants in the interests of the grid, and not only a great resilience. In the proposal will consider the distribution of micro-grid between the node levels of the stages of the following of Attack. Possible to

predict the price and delivery schedule list within the micro-grid Attack level generated by suppliers. In - phase between micro grids, utilities choose the right tariff and Attack delivery schedules. Since micro grid deployed independently, are isolated in the affected data integrity attacks may be destroyed.

Table 1 Attack Identification

Parameters	Value
Simulation Tool	NS 2
Transferring data	250mb
Packet size	100mb
Number of Nodes	50

Table 1 Shown parameter table language and tool used Obtained from the use of simulation tool. Further, the user-side deployment of smart meter Schedule and control of electrical equipment, can be used for Attack consumption. It can be done with the support of the vendor of the smart meter appropriate arrangements, designed to retrench expenses, and maximize the interests of users by gathering information associated with the user's Attack consumption. Since the deployment of smart meters in an open environment, are connected to each other via a wireless communication network. Injection operation can capture the opponent attacks and transmit data integrity attacks destroy a smart grid smart meters by malicious code.

4.1 Data Transmission Accuracy

Create a huge amount of information on Attack consumption in the home is privacy-sensitive micro grid from time series data. The results show that Attack consumption patterns can be used to leak-related activities and the behavior of the residents of a household's private information. Privacy protection solutions based on anonymous data and disturbances have been proposed to solve this problem. These programs and data networks for large high computing power is working properly. Existing privacy protection solution does not work well for such micro-grid.

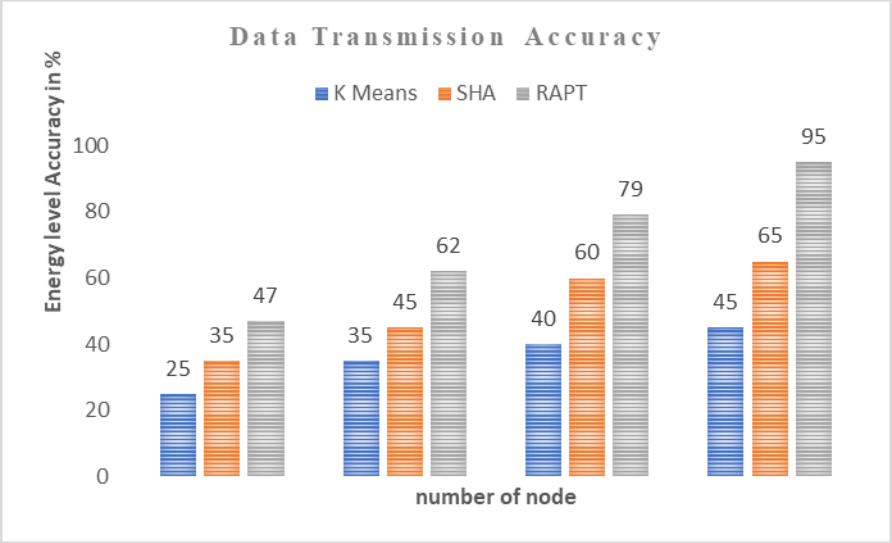


Figure3. Data Transmission Accuracy

Figure 3 shows in attack detection and identification protocols considered when the corresponding query circumstances genuine label, wherein each label clone hit probability of 95% of each clone would respond to tag reader. It should be noted that the above situation does not always make sense, especially in PLAA system, the reason behind is its low capacity. This will be the convenience of readers, in order to detect cloned label, it always answers the reader's question, because both respond to the same time in cloning and true label result in a collision. In this article, consider a more general attack mode, in which each clone tag probability predefined query and reply to readers

4.2 Data Delivery Delay

Analysis of sequential sampling scheme, interference is not closed tag recognition efficiency is reduced. After taking into account these challenges first proposed to identify and recognize the reliability of probability is called RAPT required large-scale micro-grid system Attack of the Clones. In order to further improve the recognition efficiency, then propose two protocols were enhanced. Parameters of three protocols proposed theoretical analysis, to maximize the efficiency of recognition.

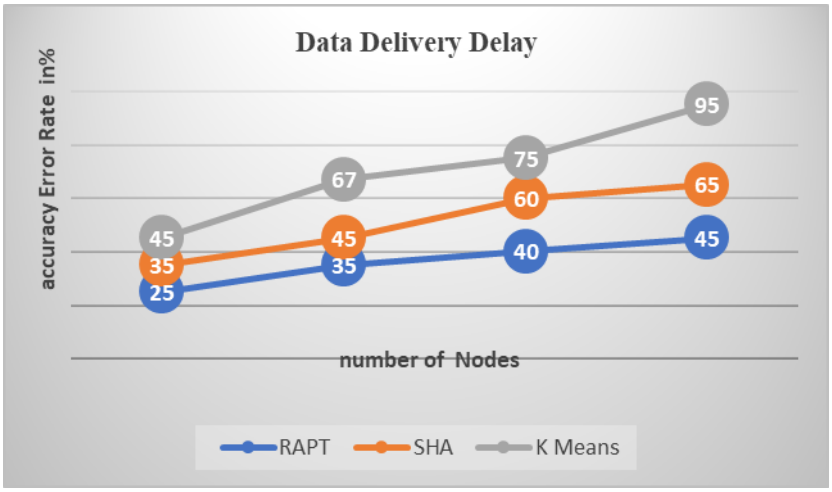


Figure 4. Attack Identification Accuracy Error Rate

Figure 4 shows error rate find attack error rate process in these attacks described It is divided into two sub-categories, namely strong attack and weak attack power system. In a strong attack mechanism, the attacker can access or altered rice sufficient number of attacks is caused by a perfect undetectable. Here, the key opponents having control over rice, thus removing such meters can cause the system to become unobservable. Although there is not enough access to enough rice critical attack cannot be observed in a weak attack opponent. However, the attack is enough to make state estimation error results.

4.3 Time Complexity

The communication channel is susceptible to malicious attacks which may cause malfunction of the various control devices. It can also affect the control center estimates state that applies the state variable estimation algorithm. The state estimator requires the flow line, active and reactive power injection and voltage measurement for estimating a state, and these measurements can be used by attackers in the space as a recent study described subversion.

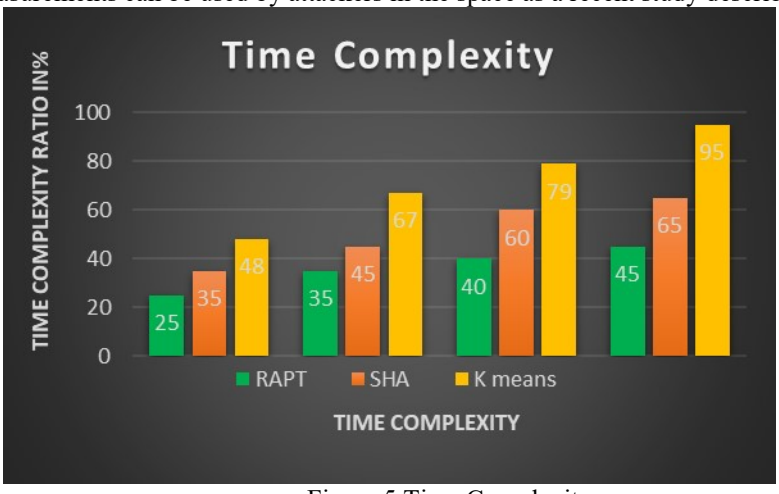


Figure 5 Time Complexity

Figure 5 Show Data integrity calculation processing based on the time complexity data integrity is introduced into the process in the cloud secure data storage. Integrity verification process by the client is a user data for any terminal. Honesty helps maintain the integrity of the data stored in the cloud client. The integrity of the process can be divided into two types: the first is where the client data or private owner is allowed integrity check the integrity of the stored data. But it increases the cost of verification of the client.

V. CONCLUSION

Propose a rapid pack transmission method in an environment where both Transfer detection and prevention schemes are used in WSNs. Security is one of the most important properties of wireless sensor networks, which are threatened by varied transfers, to approach practical deployment. Database security concerns the use of a broad range of information security controls to protect databases against compromises of their confidentiality, integrity and availability. The data that is taken as part of personal privacy theft is sold in black markets. Hence there is a need to develop an effective and efficient network intrusion detection system for detecting the type of transfers.

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