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REVIEW ARTICLE

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A Review on Reliability Oriented Routing Protocol in WSN

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Abstract: In this article we present a survey on reliable data transfer protocols in wireless sensor network. Reliable transport of data condensing the bit error rate, power rate and also reduce the time require to send the data to destination. it is very difficult to send the reliable data to destination for increasing the life time of network. There are many techniques to extend the life time of network i.e some are weighted link algorithm as well as reliable link hopping algorithm. But we need that technique which provide good result in harsh environment and give good result in case of battery powered node as well as energy harnessing nodes.

Keywords: wireless sensor network, reliability, WLA, RLA.

I. INTRODUCTION

The WSN is built of "nodes" – from a few to several hundreds or even thousands, where each node is connected to one or sometimes several sensors. The majority of WSNs described in the literature exhibit a (source, sink) architecture, which may include any number of: Source nodes: which generate data, usually by using sensors to measure environmental factors such as temperature, humidity or radiation, Sink nodes: which collect the data gathered by source nodes and Intermediate nodes: which may include source nodes that aid the transmission from source to sink. Several strategies have been developed to optimize the power consumption (increasing the network lifetime) and increase the reliability (increasing the probability of a packet being delivered) of WSNs. However, strategies to decrease the power consumption negatively affect the reliability of the network (and vice versa).

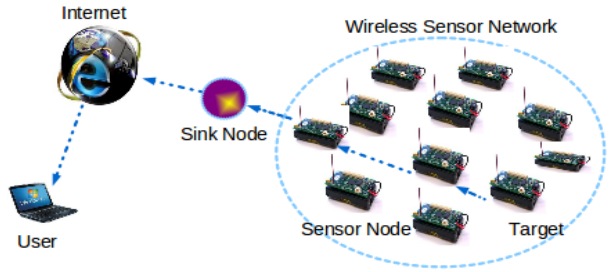

Figure 1: introduction of wsn.

In this figure in circle area is called wsn in which multiple number of wireless sensor nodes which communicate with each other and collect the information about particular region and send that data to sink node by target node through use of internet this information is acees by users.

Reliable transfer of data is the surety that the packet carrying event's information arrives at the destination.For instance data send from source to destination the main focus is that to select the path through data is send to destination. To select the path 3 factors are very important.

a. ***End to end delay:*** This means how much time taken to reach the data to destination.
b. ***Bit error rate:*** Amount of error which is send to destination along with data.
c. ***Power rate:*** amount of energy or power are used to send the data to destination.

These three factors play very important role in reliable communication. These factors are interlinked with each other. if time reach to destination is minimum and errors are less and similarly power or less amount of energy is required and path is reliable.

The most popular categorization of reliability into Packet or Event reliability level and Hop-by-Hop or End-to-End reliability level

Generally, there are two approaches to reliability WLA and RLA

In WLA we have to find the route which is most reliable. it take less amount of time and its accuracy is moderate but it miss some minor points.

In RLA we have to find the route which is reliable at given threshold value.It take more time than WLA and provide maximum accuracy

II. LITERATURE SURVEY

Amir Ehsani Zonouz et. al.[1] tries to achieve reliable wireless communications within WSNs, it is essential to have a reliable routing protocol and to have a means to evaluate the reliability performance of different routing protocols. In this paper, we use two different types of sensor nodes: 1) energy harvesting sensor nodes and 2) battery-powered sensor nodes. We then present wireless link reliability models for each type of sensor nodes, where effects of different parameters, such as battery life-time, shadowing, noise, and location uncertainty, are considered for analyzing the wireless link reliability. Based on the sensor node and wireless link reliability models, we compare the performance of different routing algorithms in terms of end-to-end path reliability and number of hops. Based on the node and link reliability models, we compared performance of different routing protocols including D, H, R, RH, and WH in terms of the average end-to-end path reliability. A dynamic routing approach that integrates the two best performance routing algorithms R and RH was further proposed.

Jenq-shiou leu et.al. [2] this paper tell a suitable clustering algorithm for grouping sensor nodes can increase the energy efficiency of WSNs. However, clustering requires additional overhead, such as cluster head selection and assignment, and cluster construction. This paper proposes a new regional energy aware clustering method using isolated nodes for WSNs, called Regional Energy Aware Clustering with Isolated Nodes (REAC-IN). In REAC-IN, CHs are selected based on weight. Weight is determined according to the residual energy of each sensor and the regional average energy of all sensors in each cluster. Improperly designed distributed clustering algorithms can cause nodes to become isolated from CHs

Jun long, mianxiong Dong, Kaoru Ota, Anfeng liu, And Songyuanhai et.al [3] here the authors presented an efficient data gathering scheme that guarantees the Quality of Service and optimizes the following network performance metrics as well as the end-to-end reliability in wsns: 1) minimum total energy consumption; 2) minimum unit data transmitting energy consumption; and 3) maximum utilization efficiency defined as network lifetime per unit deployment. They first transformed the performance optimization problem into a problem to optimize the following parameters: 1) deployed nodal number N^*; 2) nodal placement d^*; and 3) nodal transmission structure p^*. The key point of this optimization is adopting lower reliability requirements and shorter transmission distance for nodes near the sink

Ashfaq Ahmad et. al. [4] is regarding energy efficiency in wireless sensor networks (WSNs), routing protocols are engaged in a playful manner suggesting a consciousness of high value. In this paper, we present away cluster heads (CHs) with adaptive clustering habit ((ACH)2) scheme for WSNs. Our proposed scheme increases the stability period, network lifetime, and throughput of the WSN. The point of our scheme is its away CHs formation, and free association mechanisms. The (ACH)2 controls the CHs' election and selection in such a way that uniform load on CHs is ensured. On the other hand, free association mechanism removes back transmissions.

David Culler.et.al.[5]The dynamic and lossy nature of wireless communication poses major challenges to reliable, self-organizing multihop networks. These non-ideal characteristics are more problematic with the primitive, low-power radio transceivers found in sensor networks, and raise new issues that routing protocols must address.. Link status and routing information must be maintained in a neighborhood table with constant space regardless of cell density. We study and evaluate link estimator, neighborhood table management, and reliable routing protocol techniques. We focus on a many-to-one, periodic data collection workload. We narrow the design space through evaluations on large-scale, high-level simulations to 50-node, in-depth empirical experiments. The most effective solution uses a simple time averaged EWMA estimator, frequency based table management, and cost-based routing.

Mohit Lad .et.al.[6]in this paper we study the routing stability of the Internet as a whole. We use the observed changes in the number of routes over each ASAS link as a metric and measure such changes from multiple vantage points over a period of one year. We then apply Principal Component Analysis to identify those AS links that were most involved in routing changes. Our work is the first to combine measurement data collected from multiple monitors to gauge the overall routing stability in the Internet. Our results show that very few routing events impact the entire Internet, and those events were due to announcement of new prefixes either in the form of route leakages or address space de-aggregation. We also find that the impact of most routing events is confined to a small scope, and the existence of unstable AS links over long periods of time.

Sk Kajal Arefin Imon et.al.[7] Depending on various factors, including the WSN topology and the availability of resources, the energy consumption of nodes in different paths of the data collection tree may vary largely, thus affecting the overall network lifetime. This paper addresses the problem of lifetime maximization of WSNs based on data collection trees. Specifically, we propose a novel and efficient algorithm, called Randomized Switching for Maximizing Lifetime (RaSMaLai), that aims at extending the lifetime of WSNs through load balancing. Given an initial data collection tree, RaSMaLai randomly switches some sensor nodes from their original paths to other paths with lower load. We prove that, under appropriate settings of the operating parameters, RaSMaLai converges with a low time complexity. Based on the concept of bounded balanced trees, our algorithm randomly switches the data forwarding paths of nodes.

Jie wu et.al.[8] is developed on the base of the distributed consensus time synchronization (DCTS) algorithm. However, to obtain faster convergence in the clock synchronization of node and better energy efficiency, the clustering technique is incorporated into the algorithm. The CCTS includes two parts: 1) intra cluster time synchronization and 2) inter cluster time synchronization. In the intra cluster time synchronization, the improved DCTS is applied. The cluster head is responsible for exchanging messages within the cluster. In the inter cluster time synchronization, cluster heads exchange messages via gateway nodes. To update the clock compensation parameters of the network virtual clocks, clock compensation parameters of intra cluster virtual clocks of every cluster head are assigned with corresponding weights based on the size of each cluster.

M.Mehdi Afsar et.al.[9] has mentioned that fault-tolerance is an essential characteristic which should be considered in the design level of such networks. On the other hand, WSNs are so energy constrained and through some solutions, like clustering the nodes, energy should be conserved as much as possible. In this paper, we propose Fault-Tolerant Service (FTS) for the clustered protocols. At the beginning, all the nodes are divided into some groups as clusters via the Energy-Efficient Distance-based Clustering (EEDC) protocol. Then, the FTS along by the main operation of the network, i.e. data gathering, is performed by the cluster-heads . The FTS is composed of three steps: fault detection, fault diagnosis and fault recovery. The main idea of fault detection in the FTS is message exchange.

III. PROPOSED WORK

The proposed system will work on multipath routing. This system will contain the two type of sensor node that is energy harvesting nodes and battery powered nodes . in this we have to check the effect of different parameter on both WLA and RLA .we have to check reliability on WLA and

RLA individually and hybrid them for to get better result with in same network.for this we will use MATLAB.

IV. CONCLUSION

We have discussed an overview of the existing reliability techniques in wsn. Finally, it is concluded from the literature studies that most of in this work, we modeled the reliability of two different types of sensor nodes: energy harvesting sensor nodes (EHSNs) and battery-powered sensor nodes (BPSNs). We also presented wireless link failure models for each type of sensor nodes. In these models, we consider different parameters, such as battery life-time, shadowing, noise and location uncertainty on wireless link reliability.all the techniques work better in good enviorment conditions but not work good in harsh environment.

Since the selection of the right procedure of removing problems occurred in both techniques plays an important role, it is important to experiment and a hybrid technique need to be developed which uses both techniques to get meaningful result.

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