

Usage of mobile sinks and CAEE algorithm to control congestion in WSN

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Abstract— WSN is a collection of tiny nodes that is used to sense natural phenomenon and send it to the control station, source node that sense the information sends it to the control station. Congestion is one of the major problem in WSN it not only reduces the QOS of the network but also decreases life time of the sensor nodes. They are several methods proposed to address problem of congestion but Failed to save the sensor energy and limit the QOS of the network. The new system has been proposed to prevent the congestion by using concept called sink mobility which is an in network storage model that has mini- sink which is responsible for the collecting the information from the sensor nodes. This approach will limit the static sink nodes that prevent the congestion in sensor nodes . With the sink mobility we try to combine with the network routing algorithm called (CAEE) congestion avoidance and energy efficient it will work with sink mobility and prevents the static nodes means of mini sinks . This algorithm will not only prevent congestion but also improves QOS and save the sensor energy and increase the life time of the sensor nodes.

Index Terms—: Congestion Avoidance, Energy Efficient Routing, Buffer Overflow, Congestion Control, Mobile Sink, Wireless Sensor Networks.

I. INTRODUCTION

Wireless sensor Networks are used extremely in objective monitor, locality track and conflict field etc. usually the sensor nodes are controlled in storage, natural life, authority, computation ability and in energy too. The sensor nodes are satisfyingly little in nature, they consists of little processing unit, that has the ability of controlled computational power. Generally they are battery powered and energy controlled. The sink node i.e. target node is most powerful that is employed as gateway to the wired network and its doing knowledge collecting and processing. The lifetime of the sensor node is generally controlled, before its energy exhausted; it should to be used effectively.

In previous analysis fairness bandwidth allocation isn't well addressed. Congestion in WSNs has negative impacts on network performance and application objective, i.e., package

defeat, increased package delay, exhausted node energy and severe reliability degradation.

In WSNs, Congestion is detected by two main factors like buffer overflow and link collisions. To recognize the congestion less communication in sensor networks, we have to try to rate based mostly adjustment within the communication path have a tendency to be introducing all the in-between nodes beneath. The nodes which are neighboring the deliver and sink are generally categorized. The nodes with the purpose of neighboring the deliver node are referred to as supply surrounding nodes and therefore the nodes that all are terribly with regards to sink is termed sink surrounding nodes. These in-between nodes are getting to management the honest information rate within the communication.

II. RELATED WORK

There are two techniques congestion avoidance and congestion control techniques investigate areas in WSN. A study of congestion control is very valuable for hope investigate installation. It also elaborates the modern work completed on investigating the use of a movable sink in WSNs.

Congestion avoidance and control techniques divided the techniques developed to deal with the difficulty of data congestion in WSN into two groups: congestion avoidance and congestion control. The previous focuses on strategies to avoid congestion from occurrence and the concluding installation on removing congestion when it has occurred. From an execution point of view these techniques can be categorized into two groups: data aggregation techniques and flow control techniques.

III. SYSTEM MODEL

1. Data aggregation techniques

Focus on utilizing spatial or sequential relationship among sensed information to condense its amount and hence avoid congestion. These techniques are particularly practical in surroundings or isolated neighborhood monitoring applications where the uninterrupted statistics readings by the sensor nodes do not differ a large amount over the moment. Aggregation schemes that develop such type of connection among the sensed statistics are called sequential aggregation schemes. Other types of aggregation schemes are known as spatial aggregation schemes. Routing

nodes (in charge for forwarding the information towards the sink) implementing spatial aggregation schemes try to locate association surrounded by the data established from dissimilar sensor nodes in an attempt to condense data amount and therefore avoid congestion. It showed that the utilize of spatial aggregation can be extremely caring for avoiding congestion in the locality of the sink. It tried to advance the data aggregation charge by applying a supportive statement technique, where several nodes in a system assist to throw data to the sink. It was experimental that greatest consequences were obtained if the reserve between the resource and the sink is bulky. However, their scheme requires irritated level propose for routing, development and statement protocols to realize finest consequences. It obtainable a hierarchy based data aggregation scheme that utilizes a explore and recollect protocol to attach the sensor nodes that are thinly situated at scorching regions in the sensor ground.

2. Flow control techniques

Aim to organize the quantity of information that is graceful on the routing trail to avoid congestion using different strategies. For example, implemented a reverse force method to confine statistics flow. It allow the receiver node to adjust the absent current of data from the sender node. All the techniques belonging to this group confine the course of data which in common also consequences in data loss. In accumulation to over mentioned schemes. It planned a node precedence based congestion organize scheme for wireless sensor networks. Their scheme is based on the statement that the nodes situated in a WSN have dissimilar bandwidth and wireless media organize condition for data communication. As a result, a node precedence directory can be generated on the beginning of envelope inter appearance instant and examine moment at every node. With the assist of this directory, sensor nodes having important data transfer can be assigned more contact to the communication medium than the nodes with fewer interchange. On the other hand, further above your head is concerned in this scheme for maintaining the precedence directory of the sensor nodes. It offered a congestion avoidance scheme that is based on the proposal that at any particular position of instance consumer nodes have absolute in order about the barrier condition of their close relative node. As a result, in case of congestion the consumer node moreover reduces the data that it is forwarding to the close relative node or switches to various other close relative node. Investigation of the particular schemes has exposed that even if they avoid or eliminate congestion, but they fail to avoid data and energy defeat during this method. For example, aggregation based techniques completely depend on decision association between the sensed data. If the collected data is of varied behavior because of more usual behavior of dissimilar types in the WSN, these techniques fail.

3. Data routing towards a portable sink

Over the precedent only some time the use of a portable sink has improved in WSNs to attain improved presentation, in exacting for objective consumption of the

sensor field force and to delay the generation. The sink can track three basic types of mobility patterns in a WSN: accidental mobility and illegal mobility.

4. Accidental mobility

In this folder the sink follows a accidental path in the sensor field and equipment approach for data gathering from the sensor nodes. Data can be requested from moreover one trip or k . Their consequences showed that if improved data latency is acceptable then accidental sink mobility can be used for rising the generation of the sensor network. In addition, if the sink carries out data gathering from k trip neighbors as an alternative of one trip neighbors, data latency can be adequately compact. On the other hand, with accidental sink mobility it is not potential to assurance data gathering from all the sensor nodes located in a WSN.

5. Illegal mobility

Use of illegal sink mobility is also analyzed in WSNs for rising the generation outlined a structure which utilizes situation conscious movable persistent strategy for data gathering from the sensor field. These situation conscious devices are theoretical to be intellectual sufficient to recover their probable prospect position on the source of data generated by the field and way of mobility. This information is utilized for preparation the data gathering method. Illegal sink mobility based schemes are a superior decision if concentrated data latency is required, but they are fewer charge valuable than accidental/predetermined trail mobility. The conversation showed that if data latency is allowable, then the most excellent routing approach that incurs least amount data defeat due to sink mobility and also provides most generation of the sensor system with least amount charge is obtained if the sink follows a separate mobility model the length of the edge of the sensor field. In several submission scenarios, On the other hand, a movable sink cannot shift generously in the deployed area. As a result the recalculated trajectories may not be related. To stay away from regular sink position inform traffics when a sink's prospect locations cannot be planned in proceed we two force capable practical data coverage protocols, Sink Trail and Sink Trail-S, for movable sink-based data gathering. The preceding protocols attribute low-complexity and concentrated manage expenses. Two exclusive aspects decide our advance from preceding ones: 1) we agree to adequate give in the association of movable sinks to with dynamism adjust to a variety of earthly changes; and 2) lacking supplies of GPS procedure or predefined landmarks, Sink Trail establishes a valid organize scheme for routing and forwarding data packets, creation it appropriate for various purpose scenarios. We critically examine the contact of numerous aim factors in the preceding algorithms. In cooperation abstract investigation and simulation results demonstrate that the algorithms reduce manage above your head and give in acceptable presentation in decision shorter routing paths.

These routing patterns corrupt the presentation of a WSN in two scope (i) improved in order defeat due to blocking in the surrounding area of the sink, and (ii)

concentrated generation of the sensor system since the nodes situated in the surrounding area of the sink run elsewhere of their power a large amount earlier than the relax of the sensor field. So it can be conditional that if the particular information gathering position is replaced with various information gathering position then important reductions in the congestion and the information defeat can be obtained. On the other hand any resolution based on the use of various still sinks is not charge efficient. Furthermore, nodes situated in the surrounding area of the fixed sinks also put away their force a great deal previous than the relax of the sensor field. As a result, in this document we deal with the over mentioned issues, by presenting a routing protocol that is based on an in-network storage representation and a movable sink.

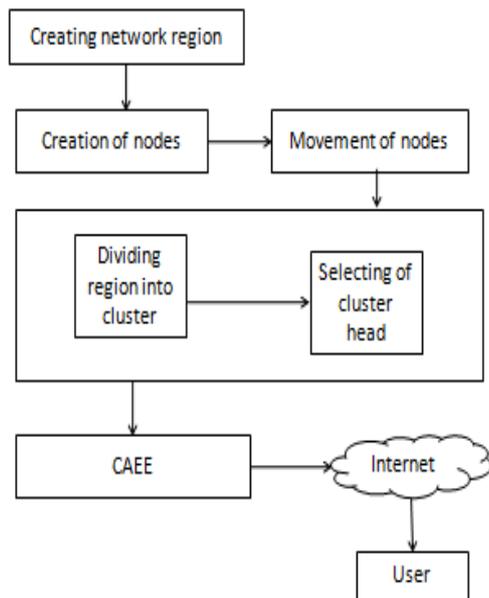


Fig1. System Architecture

6. CAEE Routing Protocol

To concentrate on the troubles of congestion and energy effectiveness in WSNs, we nearby the congestion avoidance energy efficient routing protocol (CAEE). CAEE is based on isolated sink mobility beside a predetermined course in the WSN. The CAEE protocol does not require any limitation on the character of the mobility trail of the sink. On the other hand it is known from that the mainly force capable routing is just likely if the mobility trail of the sink is beside the edge of the sensor ground. As a result lacking defeat of generalization we choose the edge of the sensor field as the mobility course of the sink.

The condition for the collection of information collector nodes is based on reserve quantity explained in the next sink starts its mobility beside the edge of the sensor field from an random node situated at the edge of the sensor field called create node. If the create node is also a collect start node then the sink assigns it the category of information collector node. Otherwise, the sink queries the create node regarding its gather start node. On recovery of the necessary in sequence the sink assigns the category of information collector node to the obtained gather start node. Now the sink starts its

mobility along the edge of the WSN. The sink selects the succeeding information collector node that is situated at least h hops left as of and is also the gather beginning node. Also, the third information collector node is situated at least h hops. By the moment the sink completes its initial trip beside the edge of the sensor field a separation of the sensor nodes located beside its mobility course will have been changed into information collector nodes.

The communication contains two fields: the ID of the information collector node and the trip calculation that is initialized with 1. Every sensor node getting this communication performs the subsequent confirm. If the accessible routing trail to a in sequence collector node is shorter than the recently reported method then remove the communication moreover inform the preceding stored path with the recently reported path. Augmentation the trip calculation by 1 in the usual communication and onward it. Thus, by the moment the sink completes its initial trip beside the edge of the WSN. Each node knows a straight likely method to one of the sequence collector nodes.

IV. EVALUATION

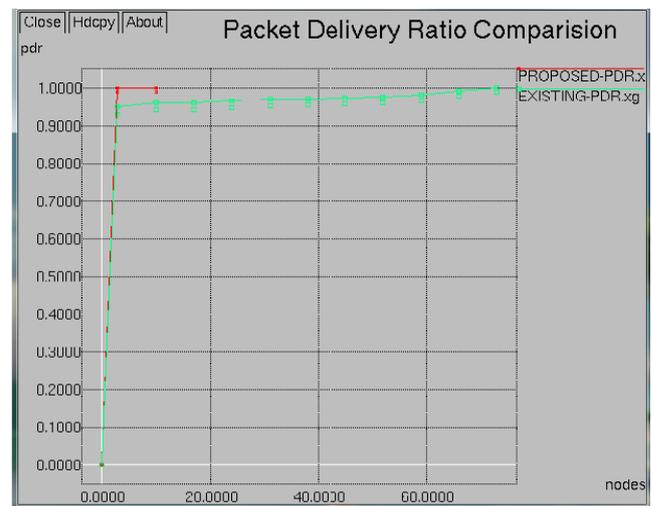


Fig. 2 Comparison Graph

V. CONCLUSION

In this Conclusion we contain considered to deal with the node intensity congestion surrounded by the wireless sensor networks. This idea achieves reasonable direct information charge contained by the statement. The recreation topic shows senior presentation in conditions of effectiveness, dependability and reserve reduction. Especially for improving throughput it'll support but complex load is improved. This topic becomes dependable for avoiding envelope defeat during the congested node located inside the statement. In categorize to generate the truthful charge surrounded by the nodes this theme is appropriate one. It aids to deal with congestion at node point mainly at in-between nodes.

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