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Optimistic Technique of Sink Relocation for a Network Lifetime Enhancement in WSN

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ABSTRACT: In the micro manufacturing technology of wireless sensor network, to develop the equipments of the low cost are impossible. Consumption of limited power can increase the network lifetime, which is the most vital critical issue in wireless communication network. The problem that enhance the network lifetime is deal with various strategies and techniques of wireless sensor network. The adjustment of transmission range or sensing range will depend on the energy that is used in sink relocation method that helps to save energy. The lifetime of a network is depend on the node arrangements that affects energy consumption in wireless sensor network. By using number of sources that directly links with the sink can helps to extend the network lifetime and to save the energy. The transmission range of the sensor nodes are adjusted according to its residual battery energy.

KEYWORDS*:* Wireless Sensor Network, Sensing Range, Lifetime, Residual Battry Energy.

I. INTRODUCTION

A Wireless Sensor Network (WSN) can be defined as a group of nodes that are independent, which are communicating wirelessly over limited bandwidth and frequency networking together for thousands of cheap sensor nodes. A sensor network consist of a large number of sensor nodes that are randomly deployed in remote environment where physically human unable to collect information continuously. It has ability to dynamically adapt the changes in environments. Hundreds of nodes that are scattered together throughout a field assemble, to establish a routing topology and transmit data to back to base station. The application demands for low-cost and easy to deploy in networks. For many setups, it is observed that WSN will consist of hundreds of nodes that are operate on small batteries.

Wireless sensor networks (WSNs) consist of tiny devices which are equipped with processing, transceivers, storage resources and batteries. Wireless sensor networks are deployed in open and in discreet environment. Through the wireless links like multi hops the collected information is sent to a sink which can use it locally and transmit to the other networks through a gateway. A node in network composed of transceiver, battery and memory. There are two types of WSN, homogeneous WSN and heterogeneous WSN. In heterogeneous, WSN can prolong network lifetime, improve reliability of data transmission & decreases the latency of data transportation. One of the important issues in sensor networks is power supply that is constrained by battery size which cannot be enhanced. Thus, an optimal use of the sensor energy has a great impact on the network lifetime.

In this paper, we propose a sink relocation scheme which guide the sink where and when to move to.

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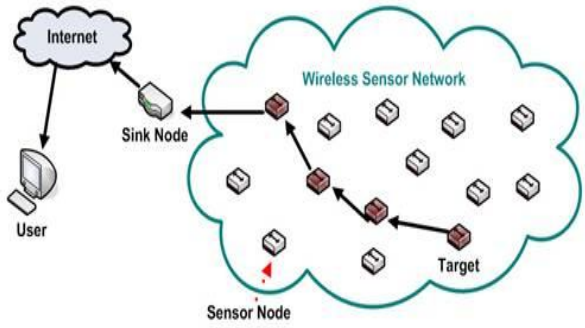

Fig: Typical multi-hop wireless sensor network architecture.

A. Ease of Deployment

Sensor network consist of number of nodes that need to be deployed in remote environments as well as allows the users to extract information. This helps the node to communicate each other even in the absence of the established network.

B. System Lifetime

The function of these network is long. It is not possible to recharge the node batteries. Hence all aspect of node from hardware to the protocol must be designed to be extremely energy efficient.

C. Latency

The data of sensor networks are time sensitive, so to receive data in proper time is important.

D. Quality

For sensor networks, the last user does not require all of the data in the network this is only because of the neighboring nodes data which are highly correlated to make the data redundant.

II. RELATED WORK

In this paper the sink relocation technique is used. As there are different techniques that enhance the network lifetime of the system. The node having the more battery energy is the sink node so the source node takes data from the sensor nodes and transmit it to the base station which is nothing but the destination. The auther can used sink relocation technique which is dynamic in which the sink can change its position dynamically.

III. PROPOSED TECHNIQUE

SINK RELOCATION TECHNIQUE

In WSN, sinks are bounded with abundant resources and sensors that generate data are termed as sources. The sources can transmit data to one or multiple sinks for the purpose of analysis and processing. In wireless sensor networks, sink relocation is preferred by all applications that involve real time traffic for even in the middle of multiple nodes it can balance the traffic load and thereby lessen the miss rate of real time packets. For repositioning of sink multiple sink mobility and sink deployment can be considered. To have an information of the area being monitored is needed to offer an ideal solution by the sink deployment method by using he sink relocation. To reallocate the sink, its odd pattern of energy must be considered.

Sink relocation is done with different techniques using different protocols. Here in this case the 50 nodes are considered which are deployed at randomly in the network by selecting particular area. In the sink relocation, the sensor nodes near the source sends data to the source and then source sends to the destination.

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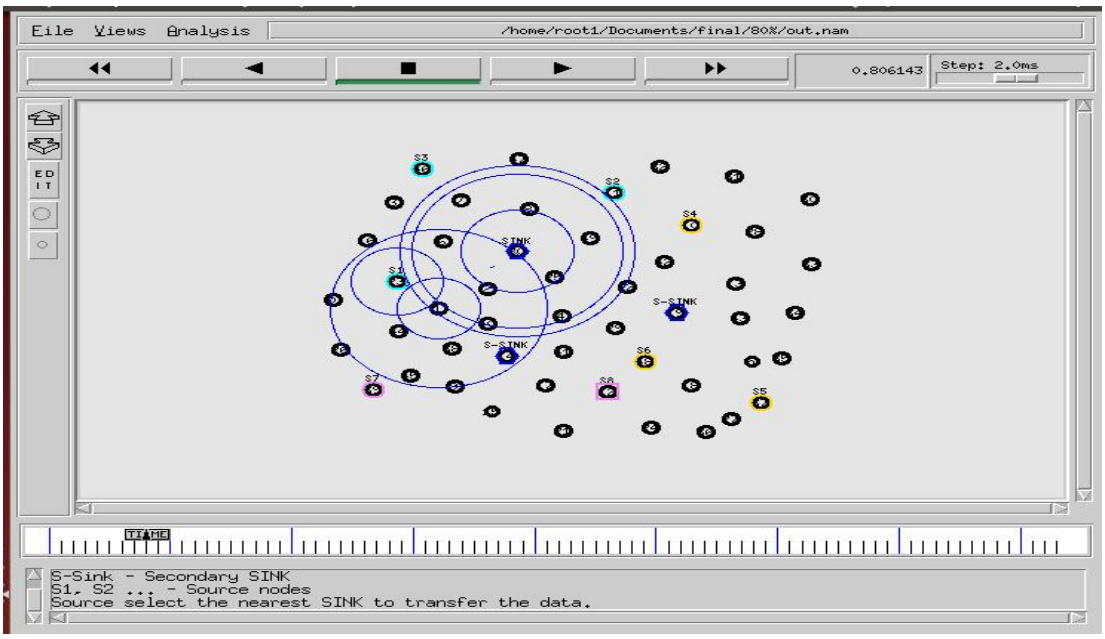
IV. SIMULATION RESULTS

PARAMETERS REQUIRED:

Sr.No.	Parameters	Specification
1.	Channel	Wireless Channel
2.	Propogation	Two Ray Ground
3.	Antenna	Omni Antenna
4.	Diamension	1000*1000
5.	Protocol	AODV
6.	Number of Nodes	50
7.	Energy & Radio model & Link Layer	Energy & Radio model & Link Layer

The simulation studies involve the above parameters that determine the throughput, packet delivery ratio, delay in network, packet distribution. The simulation result shows the comparison of the two technique the without sink relocation technique and the sink relocation technique.



In the above simulation result the sensor nodes select the nearest source node to transmit data and then the source node transmit that data to the destination or the base station. For this simulation the source select the nearest sink to transfer the data.

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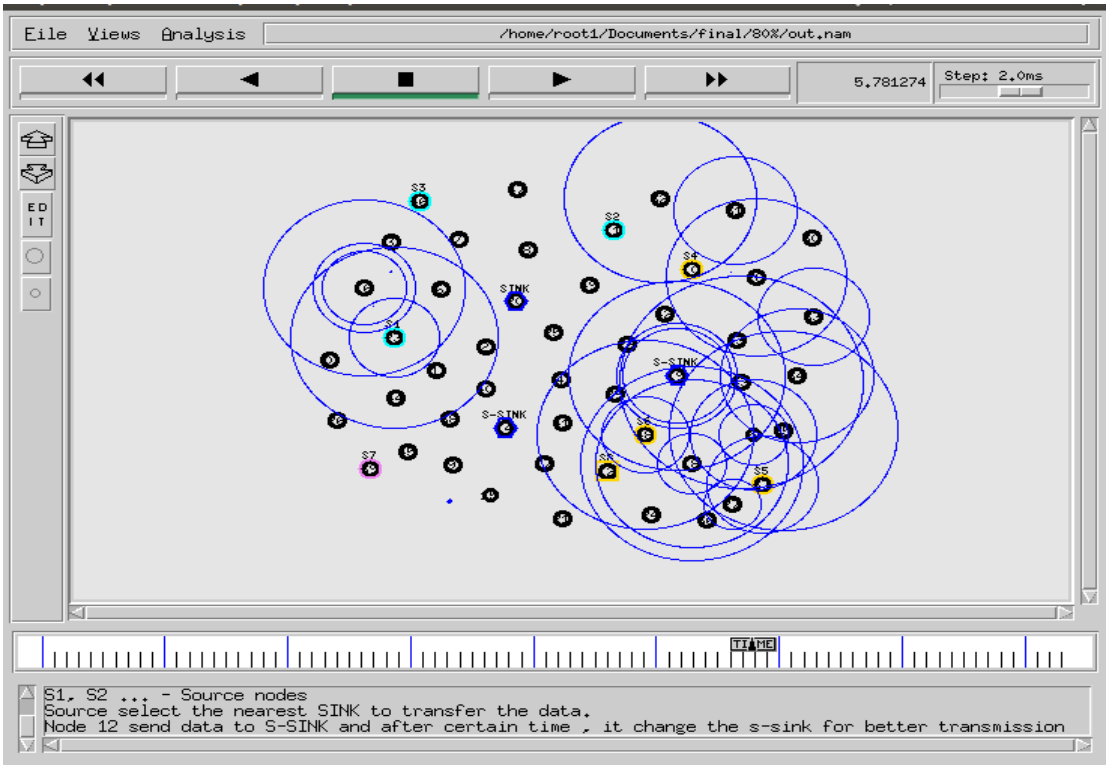

In the above simulation result the source node select the nearest sink to transfer the data. Here node 12 sends data to the s-sink and after some time when it creates traffic on that node then it changes its sink for better transmission. It mean there is relocation of sink at another position.

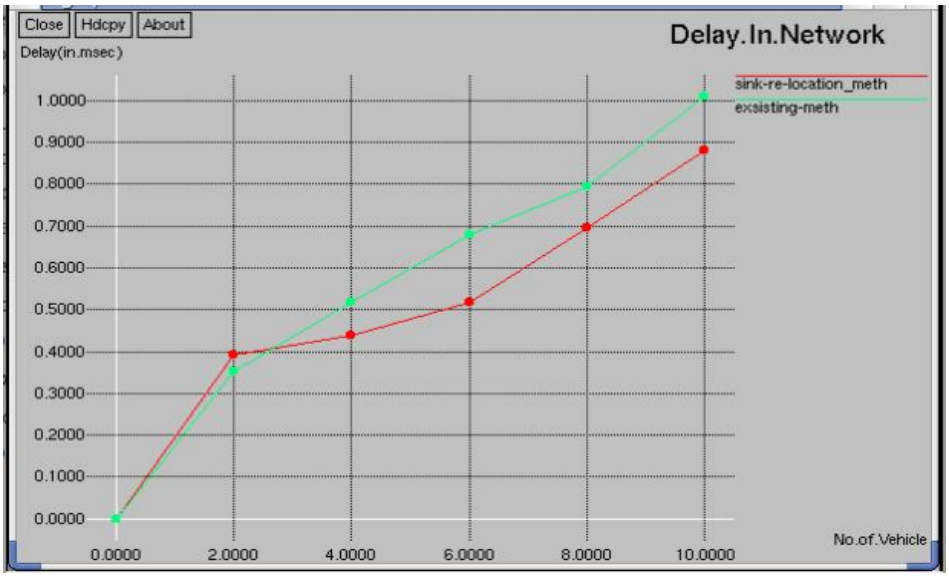

Fig.1. Comparison of Delay in the Network of sink relocation and without sink relocation technique.

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In the above graph it can be shown that on x-axis the no. of vehicle means node carrying the data are taken and on y-axis delay in msec is taken. It is shown that the delay in transmitting the data with the sink relocation method is less as compared to the old one.

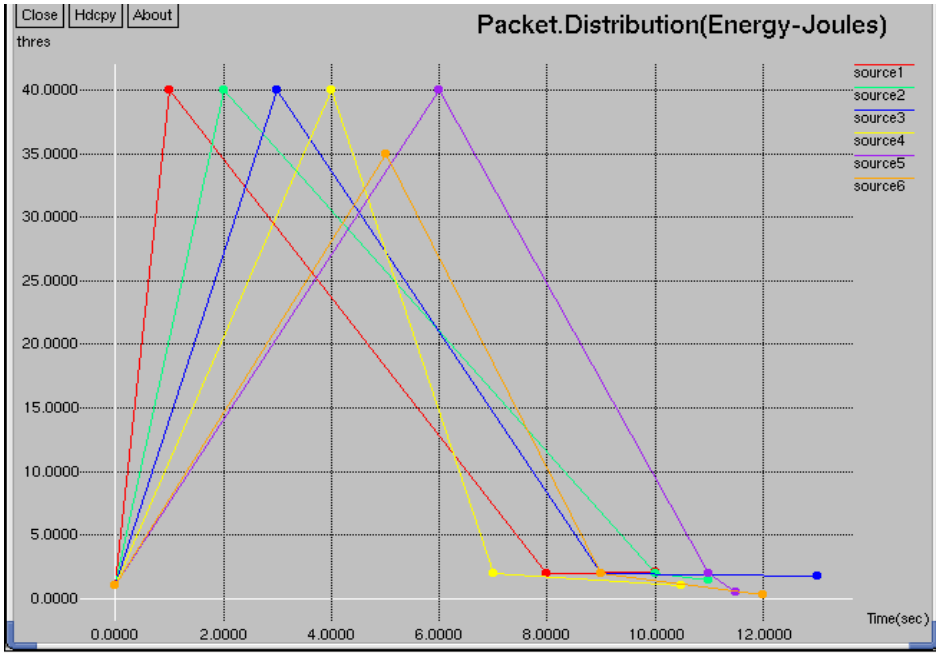

Fig.2. Comparison of Packet distribution of sink relocation and without sink relocation technique.

In the above graph it can be shown that on x-axis the time in sec taken. It is shown that the packet distribution may vary for different sources.

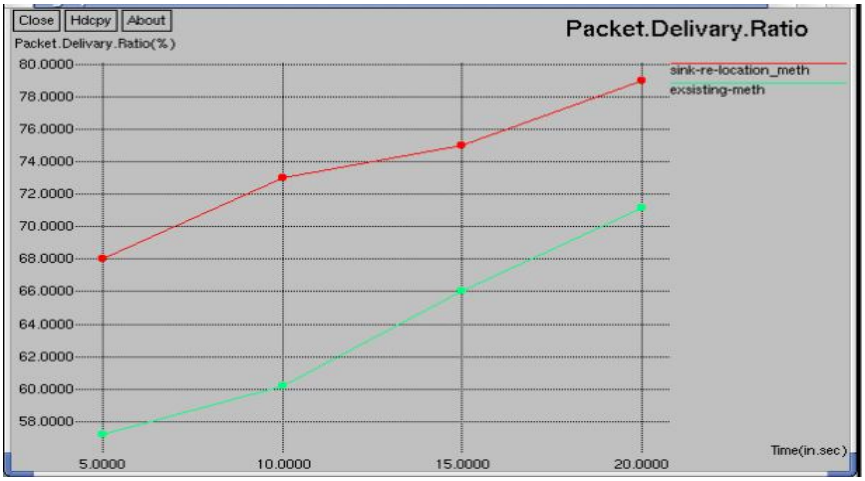

Fig.3. Comparison of Packet Delivery ratio of sink relocation and without sink relocation technique.

In the above graph it can be shown that on x-axis the time in sec is taken and on y-axis the packet delivery ratio in percent is taken. It can be shown that the packet delivery ratio is near to the 80% with the sink relocation method as compared to the old one.

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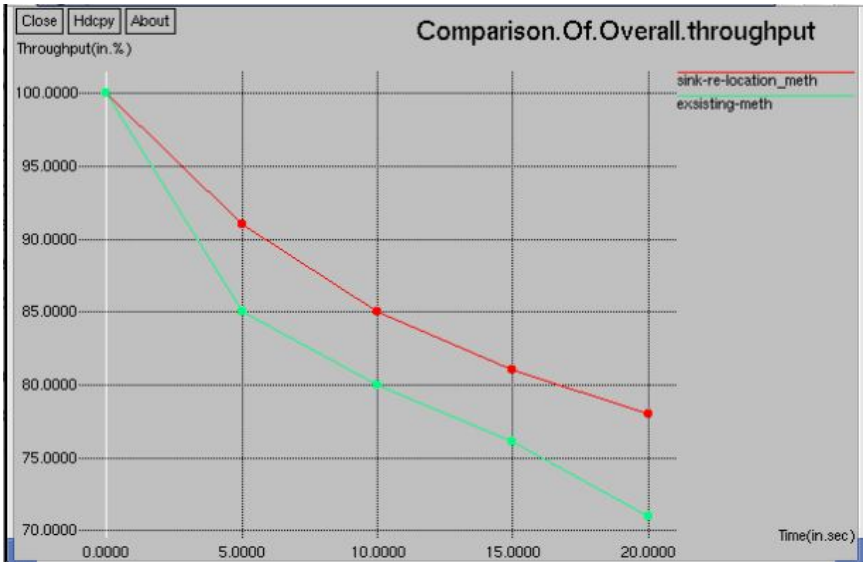

Fig.3. Comparison of Overall throughput of sink relocation and without sink relocation technique.

In the above graph it can be shown that on x-axis the time in sec is taken and on y-axis the throughput in percent is taken. It can be shown that the throughput greater with the sink relocation method as compared to the old one.

V. ACKNOWLEDGEMENT

Sink relocation in wireless senor network is essential getting the maximum through put, less delay and the best packet delivery ratio.This results in to save energy and extend the network lifetime. This paper represents the sink relocation mechanisms with the aid of number of sources used.

VI. CONCLUSION

The sink relocation may enhance the network lifetime of a WSN by the network routing protocol and the applications which runs in a WSN will affect the performance of the network lifetime. A relocatable sink is another approach to prolong the network lifetime by using the sources that will communicate with the nearest sensor nodes.

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