A Comparative Study On Data Dissemination Techniques In WSN

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Abstract- *This paper presents a comparative study on data dissemination techniques for wireless networks of energy-constrained devices such as sensor networks. The network is composed of a significant number of nodes distributed in an extensive area in which not all nodes are directly connected. Then, the data exchange is supported by multi-hop communications. Routing protocols are in charge of observing the routes in the network. To support network programming, we demonstrate deluge a reliable data dissemination protocol for propagating large scale data objects from one or more source nodes to nodes other nodes over a multihop, wireless sensor network. Existing work based on comparative study of existing research work in wireless sensor network and explores the possibilities of new research in these areas.*

Keywords- *wireless sensor network, routing protocol, direct diffusion.*

I. INTRODUCTION

Sensor networks are built with the help of small and highly wireless node distributed in large number to monitor the system by the measurement of physical parameter such as pressure, temperature, or humidity, and characteristics of objects and the motion wireless nodes can be used in chemical processing, military, health and disaster relief scenarios. The main work of a wireless sensor node is to sense and collect the data from a certain domain, process and transmit it to the sink. Data dissemination is the process by which data are routed in the sensor network. Sensor node is collecting the data and communicates to the BS or any other node which is interested. The node which is generating the data is called a source and the information to be reported is called an event. A node which is interested in event and seeks information are called sink. Data diffusion consists of a two step like propagation and data propagation. For every event, sink is interest broadcasts to its neighbors. This process is similar to a multicast tree, sink is root node in this tree. There is several routing approach in data dissemination technique like: flooding, gossiping, rumor routing, sequential assignment routing, directed diffusion, sensor protocols for information via negotiation, cost-field approach, geographic hash table and small minimum energy communication network.

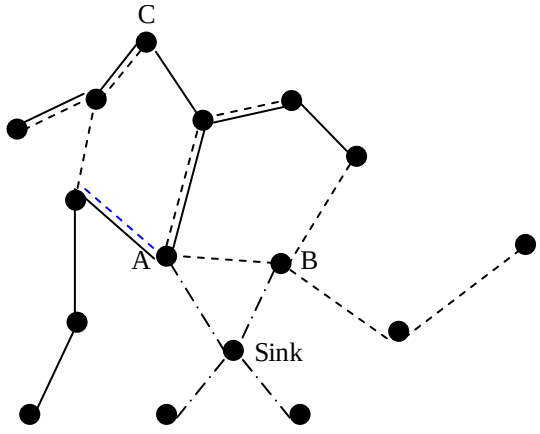
II. REVIEW OF EXISTING WORK

A. GOSSIPING

It is an advanced version of flooding [1]. Node sends a packet to a randomly selected neighbor and has lower overhead as compare to flooding. In this technique there is no guarantee that all nodes of the network will receive the message. This technique is removing the problem of implosion.

B. SEQUENTIAL ASSIGNMENT ROUTING

In [2] SAR is the first protocols for wireless sensor networks that provide the invention of QoS routing criteria. It is depends on the association of a priority level to each packet. Additionally, the links and the routes are related to a metric that functionality their potential provision of quality of service. This metric is based on the energy cost and delay. Then, the algorithm build trees rooted at the one-hop neighbors of the sink. To do so, a various parameters such as the packet priority, the energy resources and the QoS metrics are taken into account. The protocol must periodically compute the routes to be prepared in case of failure of one of the active nodes



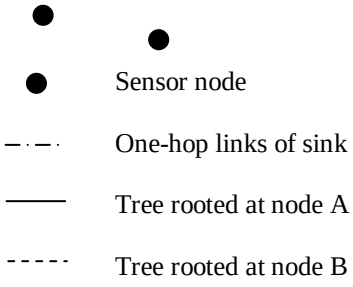


Fig 1. Sequential assignment routing

C. FLOODING

If the node is not the destination of the packet and the maximum hop-count is not reached so each node broadcast a packet and receives it [1]. There are two type of flooding like: controlled flooding and uncontrolled flooding. In a controlled flooding there are two algorithms like: sequence number controlled flooding (SNCF) and reverse path flooding (RPF). In SNCF all node attaches its sequence number and address. Flooding has some disadvantages like: implosion, overlap, resource blindness.

D. RUMOR ROUTING

This algorithm is an agent-based path creation [3]. Agents are long-lived entities produce at random by nodes. Agents are basically packet which is transfer in the network to find shortest path to events that they encounter. When the query is reproduced at a sink, it id sent walk with the hope that it will find a path leading to the required event. This protocol is based on high probability of simple lines crossing each other on a planar graph, suppose the network topology is same as a planar graph, and the path established can be approximated by straight lines owing to high density of the node.

E. DIRECTED DIFFUSION

Directed diffusion [4] consists of several elements: interests, data messages, gradients, and reinforcements. An interest message is a query or an interrogation which specifies what a user wants. Each interest contains a description of a sensing task that is supported by a sensor network for acquiring data. Typically, data in sensor networks is the collected or processed information of a physical phenomenon. Such data can be an event which is a short description of the sensed phenomenon. In directed diffusion, data is named using attribute-value pairs. A sensing task (or a subtask thereof) is disseminated throughout the sensor network as an interest for named data. This dissemination sets up gradients within the network designed to "draw" events (i.e., data matching the interest). Specifically, a gradient is direction state created in each node that receives an interest. The gradient direction is set toward the neighboring node from which the interest is received. Events start flowing towards the originators of interests along multiple gradient paths. The sensor network reinforces one, or a small number of these paths.

F. SENSOR PROTOCOL FOR INFORMATION VIA NEGOTIATION

A collection of protocols called sensor protocols for information via negotiation (SPIN) [5]. SPIN are uses resource adaptation to address the disadvantage of flooding. Meta data is transmitted instead of row data. There are basically three types of massages: ADV, REQ and DATA. ADV's containing meta data. If its neighbor is interested, it sends the REQ for the data. Then the sender sends the DATA to the neighbor.

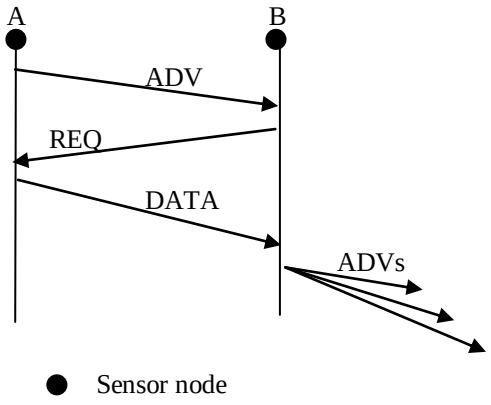


Fig 2. SPIN protocol

G. COST-FIELD APPROACH

The cost-field approach [6] considers the problem of setting up paths to a sink. It is a two-phase process, the first phase being to set up the cost field, based on metrics such as delay, at all sensor nodes, and the second being data dissemination using the costs. At each node, the cost is defined as the minimum cost from that node to the sink, which occurs along the optimal path. Explicit path information does not need to be maintained.

GEOGRAPHIC HASH TABLE

These hash table [7] is a system based on data-centric storage, these technique are inspired by internet which is nearest to the hash value. The evaluated hash value is mapped onto a unequaled node agreeable, so that queries for the data can be flow to the correct node. Stored data is reduplicate to ensure pleonastic in case of node fail down, and a consistency protocol is used to maintain the reduplicate data. scale distributed hash table (DHT) system.

SMALL MINIMUM ENERGY COMMUNICATION NETWORK

To construct a part of network with the help of given communication network. If the whole sensor network is describe by a graph A, the subgraph A' constructed such that the energy usage of the network is reduces. The number of edges in A' is less than the number of edges in A, but all nodes of A are contained in A'. the connectivity between any two nodes is not interrupt by the subgraph. SMECN also follows the minimum energy [8].

Protocol	Attribute Based	Energy efficient	Multi Path	QOS
Flooding				
Gossip-ing				
Rumor routing	Y			
Directed diffusion	Y			
SPIN	Y			
Cost-field approach				
Geogra-phic hash table				
SMECN		Y		
SAR			Y	Y

III. CONCLUSIONS AND FUTURE WORK

In this study several techniques is responsible for achieve energy efficient, scalable and faster propagation of the data. Wireless sensor networks (WSN) have become more efficient due to the development in sensing and communication. There are several approaches in WSN. A sensor node should be energy efficient. Energy efficiency directly impact the network lifetime of the entire sensor network.

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