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Design of Route Process Reliable Transport Protocol for under water wireless Sensor Network

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ABSTRACT: Wireless sensor network turns efficient only when it attains reliability. ESRT protocol focuses on achieving reliability with minimum energy consumption of underwater wireless sensor network which comprises of large number of sensor nodes.

Sensor nodes are continuously monitored by the network. The paths for data transmission are decided efficiently among the nodes thus providing user convenience. During the scenario of data detection, the network starts performing the job of sending and receiving data. Thus the occurrence of data transmission. In this paper, we have also extended our work by enhancing ESRT protocol in order to accommodate the scenarios where multiple concurrent events occur in the wireless sensor field.

efficient way so that the data transmission between the sender and the receiver will be in an effective manner. This process is implemented for underwater data transmission. Nodes in the networks are self-configurable and also perform signal processing among one another during the data transmission. The root node performs monitoring of the nodes for efficiency during data transmission. ESRT protocol performs the operation of monitoring the nodes and transmitting data by efficient paths in the entire network with the help of the root node which focuses all the other nodes. Designers have been developed certain applications for this protocol which were successful with some of the drawbacks in the network. In this paper the technology advancement has been promoted and the drawback of the ESRT protocol has been compensated by the proposed protocol.

1. INTRODUCTION

The advancement in the technology of wireless communication has the great deal. Latest trends have been developing day to day. Wireless sensor nodes perform the operation of transmitting the data from the source to the destination which should be made in an

1.1 FOREMOST GOALS

ESRT Protocol does the operation of coordination in the network with efficient and reliable data transfer. The transmission of data is under-water so

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the packet delivery should be faster enough with less energy consumption. More drops of data in a network entirely degrade the performance of the network. The major aim of this project is to provide an efficient and reliable protocol which continuously monitors the nodes while the data transmission is going on in the network.

1.2 CONTRIBUTION

RPRT Protocol defines the network for reliable data transmission from the sender to the receiver node. The packet from source is monitored by the root node. Each node in the network are monitored for the properties like battery life, node state, node status in the network for the efficient data transmission. When the node reaches its dead state, the information is found by the root node then the route of transmission is changed. So that it reduces the data drop or data loss in the network.

2.0 BACKGROUND AND EFFICIENCY

RPRT works more efficiently in 3 following conditions,

- failure/power-down of intermediate routing nodes;
- packet loss due to link errors;
- Inadequate information sent by source nodes.

2.1 DATA TRANSMISSION DIAGRAM

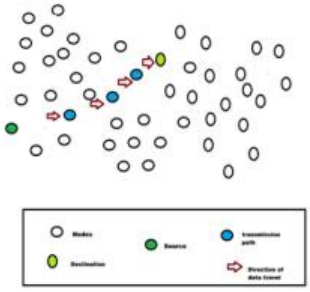

FIGURE 1

In this paper Figure 1 shows the Example of data transmission. The root node is the header node and it monitors the mediating nodes in the network. Data which has been sent from the sender is noticed by the network. The data transmission path is efficiently fixed among the nodes in the network with minimal energy consumption and reliability in the data. It reduces the delay of message travel form the source to the destination.

2.2 REVIEW

Proposed protocol will continuously monitor the network with the help of root node and provides efficient and reliable data packet transmission with minimal energy consumption. Also provides less data drop and message transmission delay in the network path of packet transmission.

2.3 ASSUMPTION

RPRT protocol is designed with the mechanism of

- Efficient and reliable data packet transmission

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- Time duration for data packet transmission is less
- Efficient and Dynamic path fixing
- During a particular time the transmission path is static

2.4 DATA TRANSMISSION SCHEME

A monitoring node request the topology of the network initiates a request. This request diverges throughout the network reaching all active nodes. A response action is set up which converges back to the initiating node with the information. Proposed scheme consists of a number of data transmission processes which is done to activate all the nodes for sending and receiving the data. Nodes get made-up for doing the job of transmitting data from one node to another. Information which is transmitted is converged to the receiver end.

The different phases of the proposed algorithm are follows

- Activate the node and its location.
- Generating the source and destination nodes for data transfer.
- Scan the nodes for path routing selection according to the sender and receiver.
- Data transmission.

I. ACTIVATE THE NODE AND ITS LOCATION

Node is activated when the network is active .Corresponding location of that particular node is get build up automatically in the network.

II. GENERATING SOURCE AND DESTINATION

The nodes which are about to send and receive the data are analysed by scanning the network. The nodes are generated if the source and destination are confirmed.

III. SCANNING THE NODES FOR PATH SELECTION

After the nodes are activated, the AODV routing protocol will check for the mediating nodes whether those are active and it finds the efficient transmission path from the source to the destination. AODV will select the way for data transmission path.

IV. DATA TRANSMISSION

Once the routing path is selected by the network, the transfer of message is started in the network. Data packets are forwarded from one node to another node without data drop thus providing reliability.

ALGORITHM EXPLANATION

Step 1: start the simulation

Step 2: the sender and receiving nodes are generated

Step 3: the AODV routing protocol allocates the path for data transmission

Step 4: the mediating nodes are chosen as per the data transmission path.

Step 5: the data transfer starts

Step 6: the nodes in the network are frequently checked for its condition.

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Step 7: if any node in the path gets weaker by the energy level, the root node allocates a new path.

Step 8: the newly allocated path is still efficient for data transmission.

Step 9: it prevents data drop and provides reliability in the data

Step 10: end the program

2.5 PARAMETERS

CHANNEL	Wireless
Propagation	Two Way Ground
Antenna	Omni Antenna
Queue Size	1000
Slot Time	20us
SIFS	10us
Data Rate	11Mbps
Basic Rate	1Mbps

TABLE 1

The above Table describes the parameters which are used in the network for data packet transfer from the source node to the destination node. The Network which is developed in this proposed network is a wireless which can be used for data packet to travel from one place to the place without the connection of any wired medium. The speed of the data transfer in the network is maximum at the level of 11Mb per second and the lowest speed of the transmission of data packet is about 1 Mb per second.

3.0 SIMULATION PERFORMANCE EVALUATION

FIGURE 2

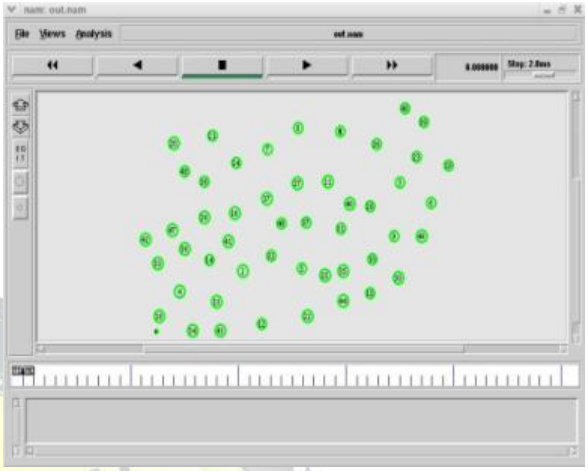
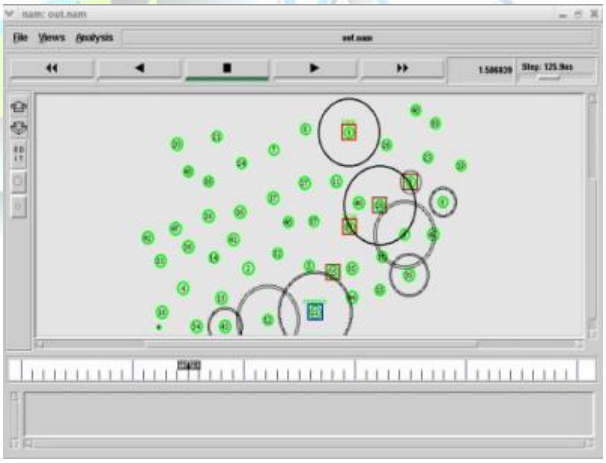


Figure 2 shows the simulation of the developed protocol. In this network we have generated about 50 nodes. In this Figure, the starting of the network and the number of the nodes are have been shown. All the nodes in the network are placed in the appropriate location which is assigned in the network.

FIGURE 3



The above Figure shows the monitoring of the node and nodes are

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activated. The nodes are getting developed for the data transmission in the network. The total sensor network is scanned and the source node and the destination nodes are generated in the network. The network finds the path for the transmission of data packet while the monitoring process is done in the network. The routing process is done by the AODV routing protocol.

FIGURE 4

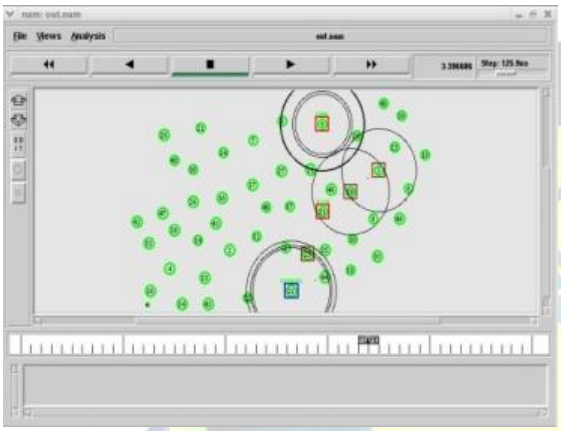
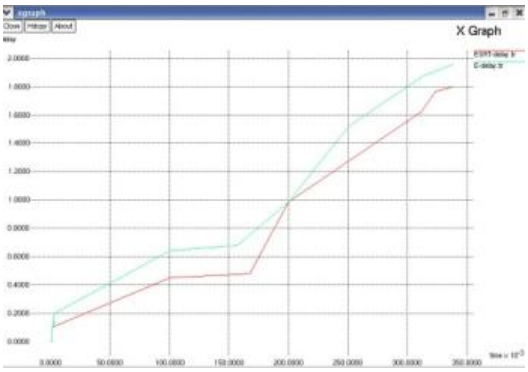


Figure 4 shows the monitoring process of the nodes which is done in the network. The Existing protocol will find the path and the data transmission occurs between the source and destination. If the energy of any mediating nodes becomes low, then there occurs data drop in the network and the reliability absconds. But the proposed RPRT protocol will be continuously transferring the data in the network when the data is been in the mode of transmission. Data monitoring is performed in the network to identify the weaker nodes. If any weaker nodes are deducted, then another efficient path for delivering the data packets is selected. This reduces the data drop and promotes the efficiency of data transmission and reduces the delay of packet delivery in the network.

DELAY



Delay is the difference between the time at which the sender generated the packet and the time at which the receiver received the packet. The delay time is less when compared to the existing protocol

ENERGY

Energy is a key element in wireless network simulation. Its goal is to identify energy consumption of a node or a particular component of a node. Here the energy consumed by the existing protocol is higher when compared to proposed protocol.

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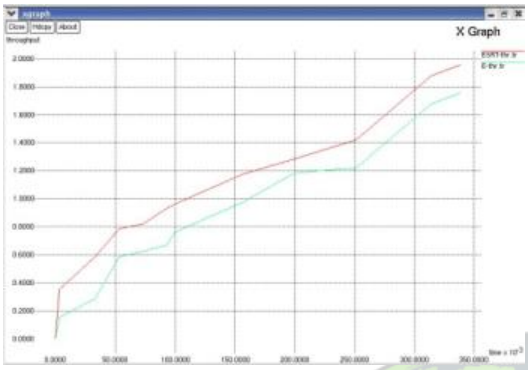
THROUGHPUT



Throughput is the number of successfully received packets in a unit time and it is represented in bps. It is calculated using awk script which processes the trace file and produces the result. The proposed protocol has a higher throughput when compared to the existing protocol.

3.1 COMPARISON TABLE

Existing	Proposed
High energy consumption	Low energy consumption
Delay time is more	Delay time is less
Data loss occurs	No data loss
It cannot identify new path	New path is identified
Speed-11mbps	Speed-15mbps
Low throughput	High throughput

4.0 CONCLUSION

. This paper has expressed the reliability and efficiency and efficient path selection in data transmission of the network. It comprises of alternate solution for the disadvantages of the existing scheme. .This proposed scheme is also been modified in the way of data packet transmission path. This mechanism reduces the data packet drop and the delay of message in the network. RPRT protocol is developed in the NS-2 simulation software. A number of algorithms has been studied and reviewed before implementing this Clustered Network Management Protocol.

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