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RESEARCH ARTICLE

TRAFFIC LOCATION ENVIRONMENT BASED A LOW PROPAGATION DELAY ROUTING TECHNIQUE IN UNDERWATER SENSOR NETWORKS

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ABSTRACT: Underwater sensor networks (USNs) consist of number of sensor nodes which are equipped with acoustic transceivers that enable them to communicate with each other to perform collaborative sensing tasks over a given area. Since each of these have a unique set of advantages and disadvantages, it becomes necessary for us to understand which of these might suit a particular scenario best. Some problems are in this model the connectivity time packet sending time it could be loss between the data transmission. Our proposed model use A Low Propagation Delay Routing (LPDR) technique is much better than other protocols, because it has higher throughput. Our proposed method has to implement this problem and use efficient data collection model on the network. The Multi-Path Route term is refer to as more than one way for degradation of the acoustic communication signal that generates that is refer to as Inter Symbol Interference. There are two channels like vertical channel Take a different parameter to show the result like as throughput, delivery ratio, delay, energy consumption, and then data collection efficient on networks.

Keywords: UWSNs, LPDR, Multihop, Redundant node, Relocation, Sector, WSNs

I. INTRODUCTION

Under water sensor networks

The works on Mobicast have explored several different approaches. The protocol only nodes that find themselves in the delivery zone path will join the forwarding. Ocean bottom sensor nodes are deemed to enable applications for oceanographic data collection, pollution monitoring, offshore exploration, disaster prevention, allocating resources and tactical surveillance applications. These sensor communicate through acoustic waves which are a type of longitudinal waves that propagate by means of adiabatic compression and Underwater Acoustic Sensor Networks (UW-ASN) consist ofϖdecompression. A variable number of sensors and vehicles that are deployed to perform collaborative monitoring tasks over a given area. Since many sensor networks need to be deployed in an ad hoc fashion a Mobicast protocol must achieve reliable and timely delivery to a dynamic set of nodes over random network topologies where routing voids are prevalent. It illustrates an example in which the delivery zone is expected to move across a hole on its path. Two nodes which are close in physical space can be relatively far away in logical network space. One can see there are many holes of varying sizes. The potential existence of holes in the network poses a challenge for Mobicast. A Mobicast session might be stopped prematurely because of a hole too big on its path.

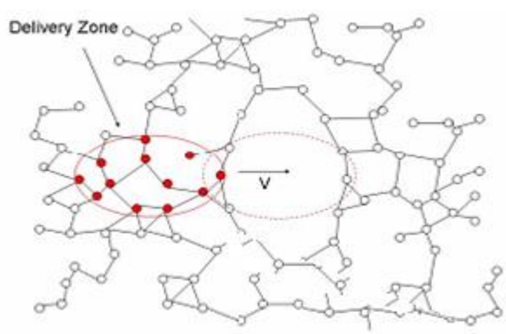

Fig 1.A random under sensor network

Initial Mobicast protocol assumes that the delivery zone moves at a fixed velocity, nodes are fixed, and communication has bounded one-hop latency during a Mobicast session. The forwarding zone guarantees that all nodes entering the delivery zone as long as the network is not partitioned will receive the message in advance. The forwarding zone also serves to limit the retransmission to a bounded space and minimize energy consumption. The nodes which are in a forwarding zone retransmit the MobicastSS message, immediately after receiving it. While other nodes which are not in forwarding zone until becoming a member of the forwarding zone, do not retransmit the message. Cut max-flow value between a source and a receiver. Therefore it is very difficult to find and maintain an optimal requires the code to be updated at every node power aware route.

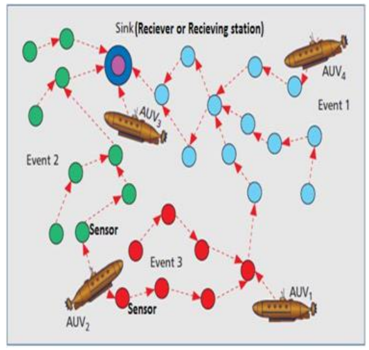

Fig 2.WSN sink node of UWSN's

In this work a scheme has been proposed to simultaneously, which brings high level of complexity and maximize the network lifetime and minimizes the power coordination. Consumption during the source to destination route the proposal in this paper presented a distributed optimal establishment.

Ocean bottom sensor nodes are deemed to enable applications for oceanographic data collection, pollution monitoring, offshore exploration, disaster prevention, allocating resources and tactical surveillance applications. To make these applications viable, there is a need to enable ϖunderwater communications among underwater devices. These sensors communicate through acoustic waves which are a type of longitudinal waves that propagate by means of adiabatic compression and Underwater Acoustic Sensor Networks (UW-ASN) consist ofϖdecompression.

II. RELATED WORK

Existing routing protocols on the terrestrial-based sensor network are classified into proactive routing protocols, reactive routing protocols, and geographical routing protocols. As mentioned above, terrestrial-based routing protocols are unsuitable for UWSN because they focus on stationary networks and incur long delay time and vast initial flooding overhead. In addition, GPS (Global Positioning System) does not work accurately in UWSN. Recently, some routing protocols are specifically designing for UWSN, which are divided into three major types of routing protocol for UWSN as follows: [11] proposed a new architecture to use large number of unmanned low-cost sensor node to locally monitor and report non-accessible underwater event in real time. This paper proposed a UWD (Under Water Diffusion) which uses no proactive routing message exchange. To solve multi-path or loss of connectivity problem, PULRP find the path on the fly because it does not need much Fist, source send the PULRP use flooding message to find information such as fixed routing table, localization synchronization process etc.

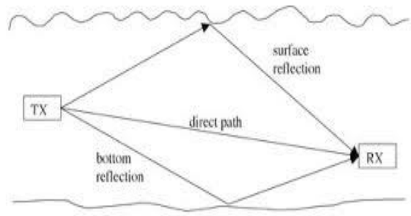

Fig 3.Relation path

The next hop to transmit packet in next layer, the optimal next hop decide by sensor node residual energy. Every sensor node first use the self battery information to estimate whether it could become cluster head and each non-cluster head decides to which cluster it belongs by choosing the cluster head that required the minimum communication energy.

III. LITERATURE REVIEW

"Short Paper: A Reservation MAC Protocol for Ad-Hoc Underwater Acoustic Sensor Networks", Leonard T. Tracy, Sumit Roy, September 15, 2008.

We consider a simple underwater sensor network (USN) consisting of gateway (a node connected directly to the backbone network via wire) and non-gateway nodes. The gateway nodes may be cabled to the sea floor with wired connectivity to shore or surface buoys equipped with RF modems and significant battery power*; the other fixed and mobile non-gateway nodes* are typically much more power limited. MAC protocol design for such a network faces interesting challenges not found in terrestrial networks. Long propagation delays amplify the throughput penalty of handshaking protocols.

"Aqua-Sim: An NS-2 Based Simulator for Underwater Sensor Networks", Peng Xie, Zhong Zhou, Zheng Peng, 2009

Aqua provides users two ways to determine the transmission range one way is to set the transmission power and the threshold of received power level; and the other way is to set the transmission range directly. It should be noted that, an independent class "Underwater Propagation" is designed to capture the attenuation characteristics of the underwater acoustic channel. The rest part of Aqua will not be affected. We are now implementing a new underwater acoustic channel model which also takes the fast-varying multi-path propagation effects into consideration.

"Idle-time Energy Savings through Wake-up Modes in Underwater Acoustic Networks", Albert F. Harris, 2006

The physical deployments of underwater sensor networks are also potentially very different than those of radio-based networks. The node density of terrestrial sensor networks is usually assumed to be very high, while the node density of underwater sensor networks is expected to be considerably lower due to different application requirements and to the fact that underwater sensor nodes are significantly more expensive to acquire and deploy. Additionally, the number of hops to a sink in a terrestrial network might be quite high. On the other hand, due to the long latencies, in underwater networks the number of hops is expected to be minimized to keep delays down. The main contribution of this work is an evaluation of idle-time power management techniques for underwater sensor networks.

IV. PROPOSED SYSTEM

In our proposed model have using a Low Propagation Delay Routing (LPDR). A Low Propagation Delay Routing technique forms a route from source to the destination which consists of n numbers of multi-sub paths during the routing path structure. Multi sub paths are helpful for sub paths form sender to its two-hop neighbors thru a relay node in the neighborhood of both sender and receiver nodes. Basically this approach is useful to keep data collision at receivers since they receive packets from different relay nodes. Under water have more traffic and not secure data transmission on the network. They use three stages sleep mode, awake mode, idle mode. To find out the destination place use shortest route on network. We have proposed a multicast routing algorithm in underwater sensor networks to allow each node to select its next hop with the highest successful delivery rate under the minimum energy consumption and increasing a throughput reduce the delay on network.

A Multi-Path Routing Protocol:

In this section, we describe how MPR work efficiently in underwater environment. The MPR consist of three phases:

(1) Propagation delay collection phase

(2) Intermediate node selection pase

(3) Relay node selection phase.

In first phase, since routing path is determined by propagation delay, so the source node needs to know the two hop delay information from its to neighbor node and form neighbor node to next hop node. In relay node selection phase, node use propagation delay information to decide which node is intermediate node I. The third phase source check all the relay nodes whether if occur the collision each other.

Length of Time Slot	**31.25ms**	**62.5ms**
Total Time Slot for Single-Path	106	53
Total Time Slot for Multi-Path	56	28
Index of Efficiency $I_{efficiency}$	86%	176.4%

Table 1: Comparison of single-path and multi-path efficiency

Proposed to efficient in underwater network transmission. It overcome propagation de-lay seriously in underwater environment. In existing investigations, single-path scheme waste more time to transmission cause ineffective network.

The contributions are summarized as follows:

(1) Our MPR protocol achieves a new low propagation delay routing protocol to transmission, which use multi-path scheme to transmission packets;

(2) Every node only needs to get two hop information which to adapt rapid change network topology environment;

(3) Our MPR protocol can reduce end-to-end propagation delay form source node to destination node because every packet distributed sanded by different path.

The third phase source check all the relay nodes whether if occur the collision each other. Propagation Delay Collection Phase In order to against long propagation delay and find the routing path is difficulty problem in underwater environment. Thus find the maximum amount path in this phase.

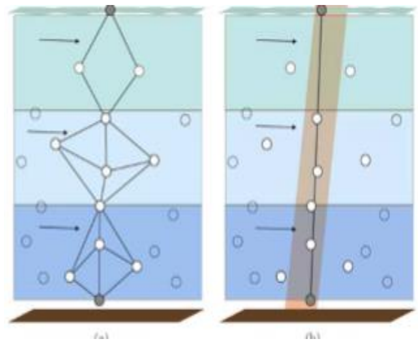

Fig 4.(a)MPR (b)VBF

Overhead:

The simulation results of the packet overhead ratio for three routing protocol. Because MPR and HH-VBF use multi-path transmission, thus the overhead in overhead is more than VBF. In the other hand, VBF use single path transmission and thus use single flooding in network. That can be reducing the overhead VBF and HH-VBF affect by the node velocity thus they get high overhead ratio. At the low node velocity, because HH-VBF uses flooding to find the neighbor, cause it higher overhead than MPR and VBF. When node velocity increase, VBF affected by the node speed because it fix pipe. MPR less affected by node velocity cause the slope is moderate than VBF. We can observe that HH-VBF is less affected by node velocity because use multi-pipe and increase the reliability.

B. Multi-Cast Routing Algorithm

Multicast routing algorithm using under water sensor network

{

```
function Multicast rou(Graph, source):
dist[source] := 0
for each vertex v in Graph:
 if v ≠ source
dist[v] := infinity                    previous[v] := 7
end if
PQ.add_with_priority(v,dist[v])
end for
while PQ is not empty:  u := PQ.extract_min()
for each neighbor v of u:        from PQ.
alt = dist[u] + length(u, v)
 if alt < dist[v]
dist[v] := alt
 previous[v] := u
PQ.decrease_priority(v,alt)
end if
end for
```

end while
return previous

}

V. RESULTS AND DISCUSSION

Simulations:

After setting up the platform, software named ns2 was set up on it which was used for all the analysis and simulation work apart from other tools used. Ns2 is the de facto standard for network simulation. Its behavior is highly trusted within the networking community.

Throughput is the amount of data transferred in a given period of time. A higher throughput increases the network performance through improved packet delivery ratio and minimized packet delay.
Although MPR use multi path to transmission but not use the entire node for relay and no transmit restrict for MPR. In high node density, HH-VBF every node occur too many same packet and drop the throughput. These three protocols suffer low throughput in spare network and increasing node density, throughput is enhanced. We can easy observe that in high density network, more nodes enter in pipe, which means more nodes are qualified for packet forwarding.

Throughput on two modes:

Throughput

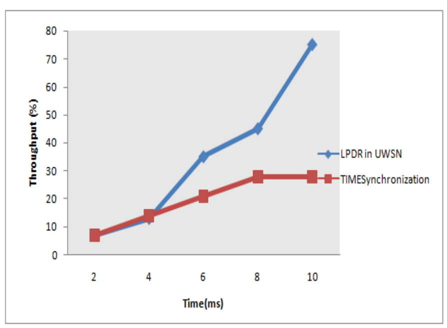

Fig 5. Input mode

The packets delivery fraction (PDF) refers to the ratio of packets transmitted and received from the source to destination successfully over the network.

At high node densities, there are too many nodes want forward packet cause large number of collision and decrease the PDR. For MPR, PDR is low in the spare node density, because it hard to find the path in the underwater environment. In high node density, node can find more forwarding path; besides the different packet distributed into different path, thus the collision can be decreased.

MPR throughput is higher than VBF and HH-VBF, because nodes in HH-VBF have to according to to transmit packet and VBF use single-path to transmit packet thus these condition affect the throughput performance. Although MPR use multi path to transmission but not use the entire node for relay and no transmit restrict for MPR.

Packet delivery ratio:

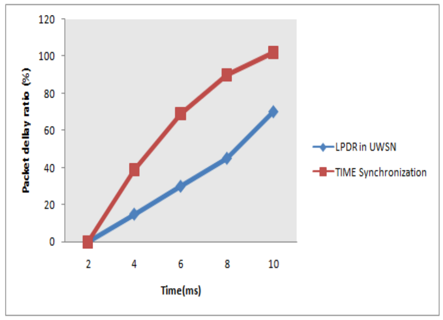

Fig 6. Output mode

VI. CONCLUSION

In under water sensor network have using an efficient data transmission on network. Our proposed model use A Low Propagation Delay Multi-Path Routing (LPDMR) protocol is much better than other protocols, because it has higher throughput. Multicast is the synchronization algorithm to utilize the spatial association individuality of underwater substance, civilizing the synchronization correctness as well as the power efficiency. The simulation results show that this new move toward achieves advanced accuracy with a lesser message overhead It use many operation leads to high energy consumption on their network. Take different parameters to use different results on the network. There are two channels like vertical channel Take a different parameter to show the result like as throughput, delivery ratio, delay, energy consumption, and then data collection efficient on networks. In future work the concentration to build scalable and dispersed mobile UWSNs for aquatic application. We recognize the only one of its kind individuality of mobile UWSNs, and there two network architectures for dissimilar types of aquatic application, identifying their key supplies in protocol design. We additional analyze the design challenge of implementing the wanted underwater networks.

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