PERFORMANCE ANALYSIS OF AODV PROTOCOL USING MANET

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Abstract: Interest in submerged Mobile Adhoc systems (MANETs) has quickly expanded with the craving to control the extensive segment of the world secured by seas. Crucial contrasts between submerged acoustic spread and earthbound radio engendering may force the outline of new systems administration conventions and administration plans. In this paper, we center on these crucial contrasts with a specific end goal to imagine an adjusted steering methodology that defeats the vitality gaps issue. In reality, vitality administration is one of the real worries in MANETs because of the constrained vitality spending plan of the submerged sensor hubs. In this paper, we handle the issue of vitality openings in MANETs while mulling over the one of a kind qualities of the submerged channel. The primary commitment of this investigation is an inside and out examination of the effect of these extraordinary submerged qualities on adjusting the vitality utilization among every single submerged sensor. We demonstrate that we can equally disperse the transmission stack among sensor hubs gave that sensors alter their correspondence control when they send or forward the intermittently created information. Specifically, we propose an adjusted steering procedure alongside the related organization design that carefully decides the heap weight for every conceivable next jump, that prompts reasonable vitality utilization among every single submerged sensor. Therefore, the vitality gaps issue is survived and subsequently the system lifetime is made strides.

Routing in MANETs:

Geographical routing protocols seem appropriate for the underwater environment, where manually anchored nodes have knowledge of their coordinates at deployment time, and mobile nodes (such as AUVs) have local navigation systems. Several geographical routing protocols, especially devised for underwater channel have been proposed. In the design of minimum energy routing protocols especially designed for the underwater environment is evaluated. To prove that, depending on the modem performance, in dense networks there is an optimal number of hops beyond which the system performance, especially in terms of energy consumption, does not improve. In , two distributed routing strategies are proposed for delay-insensitive and delay-sensitive applications. In , a new geographical routing strategy for underwater acoustic networks is introduced and joined with power control. The main contribution of this routing scheme called FBR is to dynamically establish routes on demand without damaging the network performance. Were mainly interested in providing a reliable routing solution especially dedicated for time-critical applications in underwater acoustic networks. To this end, they proposed a multipath routing scheme based on continuous power control aimed at minimizing the energy consumption without compromising the end-to-end delay. While providing a major improvement in terms of data reliability and error recovery, crucial issues such as energy consumption during reception of a packet were not taken into account in this analysis. In , a mathematical framework for cross-layer optimization is stated along with an associated protocol. Based on the unique properties of the underwater environment, the proposed solution provides a joint optimization among different layers. In particular, the proposed strategy allow each underwater node to jointly select its best next relay, the optimal transmission power and the error correction technique that minimize energy consumption. However, the lack of an acoustic transceiver able to dynamically adapt its parameters to instantaneously fit the link conditions limits the applicability of this approach in practice.

Energy Sink-Hole Problem

The energy sink-hole was originally addressed by Guo et al. They proposed an energy-balanced transmission scheme that adjusts the ratio between direct transmission to the sink and next-hop transmission. Accordingly, sensor nodes are deployed in a circular disk around the sink. Each node can send a percentage of data directly to the sink and the rest to the next hop. Precisely, the authors show that sensors far away from the sink should send a larger percentage of data to the next hop, while sensors near the sink send more data directly to the sink. it can be proposed a thorough analytical model for multipath propagation that evenly distributes the energy consumption among all sensors. Indeed, they show that sending the traffic generated by each sensor node through multiple paths instead of a single best path allows performance improvement especially in terms of energy consumption. Accordingly, they derive the set of paths to be used by each sensor node and the associated proportion of utilization that minimize the energy consumption. In , event-driven applications in a non-uniform sensor distribution were considered. The authors proposed a blind algorithm that overcomes the energy-balancing problem without a prior knowledge of the occurrences of the events.It can be minimizing the total amount of energy along a path is only achieved when the coronas of a circular field have the same width. Unfortunately, such configuration would inevitably lead to uneven energy depletion among sensors. Consequently, they computed the optimal widths of coronas and their optimal number in order to achieve fair energy depletion of sensors.

To propose a designed deployment pattern for MANETs aimed at balancing the energy consumption and hence an improved overall energy management. Second, based on the proposed deployment, To prove that it can evenly distribute the transmission load among Mobile Adhoc Networks with constant data reporting provided that sensors adjust their transmission powers when they send o forward sensed data.

Our ultimate aim is to balance the energy consumption among all Mobile Adhoc Networks which are manually deployed according to a defined deployment pattern such that network management is facilitated. Our balanced routing solution dictates that each Mobile Adhoc Network can tune its transmission power among multiple possible levels.

INTERNAL ARCHITECTURE OF MOBILE ADHOC NETWORK

The internal architecture of Mobile Adhoc Network is shown in figure 2.1. In internal architecture the CPU-on board controller, sensor interface circuitry, acoustic modem, memory, power supply and sensor are main component.

It consists of the main controller which is interfaced with sensor through a sensor interface circuitry. The CPU or controller receive the data from the sensor and stored it in the memory, process it and send to another sensor through the acoustic modem. Sometimes all the sensor component are protected by the Bottom-mounted instrument frames that are design to permit azimuthally omnidirectional communications, and protect the sensor and modem from potential impact of trawling gear.

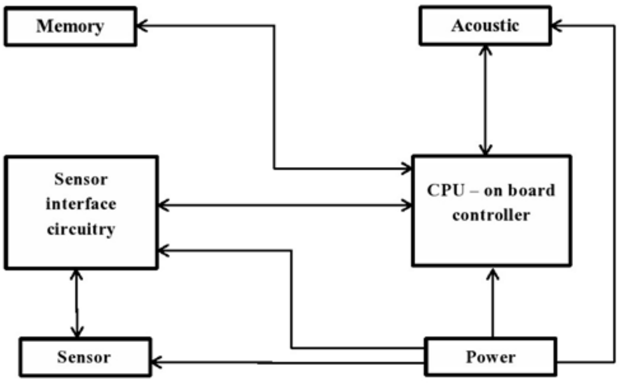

Figure 2.1 Internal architecture of Mobile Adhoc Network

MOBILE ARCHITECTURE OF MOBILE ADHOC NETWORK NETWORK

The next architecture uses AUVs and UUVs as network nodes. Fig. 2.4 shows an example of the architecture. The main important factor in this architecture is a mobility of nodes. Mobile node put extra controlling complexity in the network. In addition the network consumes more power because they consume extra power due to force or movement of mobile node in water. Moreover the mobile node is less reliable and shorter lifetime.

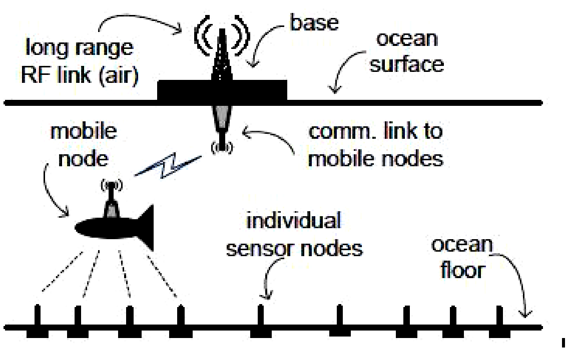

Figure 2.4 Mobile architecture of Mobile Adhoc Network

Both mobile and static architecture has some advantages and disadvantages.So,we need hybrid architecture to highlight or underline the advantages of both architecture. In hybrid architecture that include uses both mobile node and static node by which we can transmit our sensed data efficiently from floor sensor to surface station. In this this architecture the mobile node traversing over the static field or static sensor and achieve the point-to-point communication. The static sensor node transmits the data to water surface station via mobile node.

Deployment Analysis in Underwater Acoustic Wireless Sensor Networks

The different deployment strategies for two-dimensional and three-dimensional communication architectures for Underwater Mobile Adhoc Networks (MANETs) are proposed, and statistical deployment analysis for both architectures is provided. The objectives of this paper are to determine the minimum number of sensors needed to be deployed to achieve the optimal sensing and communication coverage, which are dictated by the application; provide guidelines on how to choose the optimal deployment surface area, given a target region; study the robustness of the sensor network to node failures, and provide an estimate of the number of redundant sensors to be deployed to compensate for possible failures.

Mobile Adhoc Network networks are envisioned to enable applications for oceanographic data collection, ocean sampling, environmental and pollution monitoring, offshore exploration, disaster prevention, tsunami and seaquake warning, assisted navigation, distributed tactical surveillance, and mine reconnaissance. There is, in fact, significant interest in monitoring aquatic environments for scientific, environmental, commercial, safety, and military reasons. While there is a need for highly precise, real-time, fine grained spatio-temporal sampling of the ocean environment, current methods such as remote telemetry and sequential local sensing cannot satisfy many application needs, which call for wireless underwater acoustic networking. Underwater Mobile Adhoc Networks (UWASN) consist of sensors that are deployed to perform collaborative monitoring tasks over a given region. UW-ASN communication links are based on acoustic wireless technology, which poses unique challenges due to the harsh underwater environment, such

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. as limited bandwidth capacity, high and variable propagation delays, high bit error rates, and temporary losses of connectivity caused by multipath and fading phenomena.

We consider two communication architectures for MANETs, i.e., the two-dimensional architecture, where sensors are anchored to the bottom of the ocean, and the three-dimensional architecture, where sensors float at different ocean depths covering the entire monitored volume region. While the former is designed for networks whose objective is to monitor the ocean bottom, the latter is more suitable to detect and observe phenomena that cannot be adequately observed by means of ocean bottom sensor nodes. We propose different deployment strategies, and provide a mathematical analysis to study deployment issues concerning both architectures, with the objectives below:

i) Determine the minimum number of sensors needed to be deployed to achieve the target sensing and communication coverage, which are dictated by the application;

ii) Provide guidelines on how to choose the optimal deployment surface area, given a target region;

iii) Study the robustness of the sensor network to node failures, and provide an estimate of the number of redundant sensors to be deployed to compensate for possible failures.

The deployment strategies for two-dimensional and three dimensional architectures for Mobile Adhoc Network networks were proposed, and deployment analysis was provided. The objectives were to determine the minimum number of sensors to be deployed to achieve the application-dependent target sensing and communication coverage; provide guidelines on how to choose the deployment surface area, given a target region; study the robustness of the sensor network to node failures, and provide an estimate of the number of required redundant sensors.

CONCLUSION

Our ultimate aim is to balance the energy consumption among all Mobile Adhoc Networks which are manually deployed according to a defined deployment pattern such that network management is facilitated. To present underwater Mobile Adhoc network communications. It describes the underwater monitoring application for oceanic environment. It can be defined as an Mobile Adhoc network can be transmit data very effectively and efficiently. It discussed about the limitations and broad applications of underwater Mobile Adhoc communications. This paper has summarized our ongoing research in Mobile Adhoc Network networks, including potential applications and research challenges. First, To propose a designed deployment pattern for MANETs aimed at balancing the energy consumption and hence an improved overall energy management. Second, based on the proposed deployment, To prove that it can evenly distribute the transmission load among Mobile Adhoc Networks with constant data reporting provided that sensors adjust their transmission powers when they send o forward sensed data.

FUTURE WORK

Many advantages can be exploited by using Mobile Adhoc Network networks, but a lot of research must be done in the upcoming years. Developing this technology will have a great impact on the industry. It is necessary to improve the physical layer performance in terms of efficiency, building low power acoustic modems that are able to make the best use of the bandwidth, reducing the error rate with forward error correcting coders. Research on underwater communications and the use of

Underwater Wireless Sensor Networks is becoming a very hot topic because of the appearance of new marine/oceanographic applications. Communications based on EM wave transmission offer great benefits such as the increase of the data rate of the link to transmit more information. It can have performed several tests at different frequencies and modulations, in order to check several parameters such as the minimum depth, distance between devices and signal transmission characteristics.

References:

[1] I. F. Akyildiz, D. Pompili, and T. Melodia, **"Underwater Mobile Adhoc networks: research challenges"**Ad Hoc Networks, vol. 3, no. 3, pp. 257-279, May 2005.

[2] Rakesh V.S, Srimathi.C A **"survey on Mobile Adhoc Network and architecture and protocols",** International journal of computer science and engineering technology (IJCSET)-Vol.4no.2 February-2013.

[3] Aman Sharma, Abdul Gaffar.H – **"Survey on routing protocol for Mobile Adhoc Network network"** International journal of computer science and communication network – Vol 2(1), pp.74-82

[4] YoncaBayrakdar, Nirvana Meratnia, AylinKantarci, **"A comparative view of routing protocols for underwater wireless sensor networks"**978-1-61284-4577 00880/11/$26.00, 2011 IEEE.

[5] F. Akyildiz, D. Pompili, and T. Melodia, **"State of the Art in Protocol Research for Underwater Mobile Adhoc Network"** in Proceedings of the ACM International Workshop on Under Water Networks (WUWNet), Los Angeles, USA, 2006, pp. 7-16.

[6] J. H. Cui, J. Kong, M. Gerla, and S. Zhou, **"Challenges: Building scalable mobile underwater wireless sensor networks for aquatic applications"**IEEE Network, vol. 20, no. 3, pp. 12-18, May-June 2006.

[7] AlmirDevis, Hwa Chang, **"underwater wireless sensor network"** - IEEE 2012.

[8] A.Gkikopouli, G.Nikolakopoulos and S.Manesis, **"survey on wireless sensor network and application"**, IEEE July 2012

[9] I. F. Akyildiz, W. Su, Y. Sankarasubramaniam, and E. Cayirci, **"Wireless sensor networks: a survey"**Computer Networks, vol. 38, no. 4, pp. 393-422, March 2002.

[10] John Heidemann, Yuan Li, Affan Syed, Jack Wills, and Wei YE, **"Mobile Adhoc Network Networking: Research Challenges and Potential Applications"**, USC/ISI Technical Report ISI-TR-2005-603.

[11] M. Chitre, S. Shahabudeen, and M. Stojanovic, **"Underwater acoustic communication and networks: Recent advances and future challenges"**, Marine Technol. Soc. J., no. 1, pp. 103–116, 2008.

[12] F. Guerra and P. Casari, **"A performance comparison of MAC protocols for underwater networks using a realistic channel simulator"** in OCEANS 2009, MTS/IEEE- Marine Technology for Our Future: Global and Local Challenges, Biloxi, 2009, pp. 1-8.

[13] F. Guerra and P. Casari, **"World Ocean Simulation System (WOSS): A Simulation Tool for Underwater Networks with Realistic Propagation Modeling"** in Proceedings of the ACM International Workshop on Under Water Networks (WUWNet), New York, USA, 2009, pp. 1-8.

[14] J. M. Jornet and M. Stojanovic, **"Focused beam routing protocol for underwater acoustic networks"** in Proceedings of the third ACM international workshop on Underwater Networks, New York, USA, 2008, pp. 75-82.

[15] M. Molins and M. Stojanovic, **"Slotted FAMA: A MAC Protocol for Underwater Acoustic Networks"** in Proceedings of the IEEE OCEANS, Singapore, 2006, pp. 1-7.

[16] B. Peleato and M. Stojanovic, **"Distance aware collision avoidance protocol for ad hoc underwater Mobile Adhoc networks"**Communications Letters, IEEE, vol. 11, no. 12, pp. 1025-1027, December 2007.