

An Effective Routing for Managing of Critical Issues in Resource Constrained System

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Abstract

The most important rationale of multipath routing approach is to accomplish data reliability, security as well as load balancing. Due to nature of multipath routing that employs redundant paths, multipath routing can mostly deal with security, reliability as well as load balancing issues thus, multipath routing plays a significant responsibility in wireless sensor networks. A variety of techniques have been projected in designing proficient multipath routing protocols. Routing concerning single path is easy and scalable, however does not resourcefully convince the requests of resource controlled wireless systems. Multipath routing is a different routing method, which chooses several paths for distribution of data from source towards destination. In our work we put forward the protocols of multipath routing and the advantages in terms of security, reliability as well as load balancing issues. Multipath routing can prevail over important drawbacks concerning single path routing method since it can make available consistent data transmission, constant distribution of network traffic, as well as data security. Multipath routing approach is employed to make progress from failures and helps load balance to keep away from network congestion, which gets better data reliability.

Keywords: Multipath routing, Wireless sensor networks, Security, Redundant paths.

1. INTRODUCTION

A wireless sensor system includes outsized number of light-weight sensor nodes containing restricted battery duration, storage as well as bandwidth. This emerging

knowledge has been accepted by numerous fields as a hopeful solution in the direction of several challenges [1]. In major wireless sensor networks, the nodes are positioned distant from sink and consequently employ the intermediate nodes to direct the data packet in the direction of the sink. Routing in sensor networks is considered as important and it is differentiated from several networks as two types of routing methods, such as single path routing as well as multiple path routing. Routing concerning single path is easy and scalable, however does not resourcefully convince the requests of resource controlled wireless systems. Multipath routing is a different routing method, which chooses several paths for distribution of data from source towards destination. Single path routing is effortless for the reason that the route among source as well as destination node can be recognized in a particular period of time. It is scalable because, even though network changes from ten nodes to ten thousand nodes, difficulty as well as the procedure to determine path remains the similar. In single path routing, existence of a malicious node on path can control and damage the data devoid of catching the consideration of the sink node [2]. Due to nature of multipath routing that employs redundant paths, multipath routing can mostly deal with security, reliability as well as load balancing issues thus, multipath routing plays a significant responsibility in wireless sensor networks. Many procedures of multipath routing were put forward in the literary of wireless systems. In our work we put forward the protocols of multipath routing and the advantages in terms of security, reliability as well as load balancing issues.

2. AN OVERVIEW TOWARDS ADVANTAGES OF MULTIPATH ROUTING

By means of multipath routing we can utilize the obtainable resources at every node more resourcefully. Multipath routing can prevail over important drawbacks concerning single path routing method since it can make available consistent data transmission, constant distribution of network traffic, as well as data security. We specify most important advantages concerning multipath routing procedures over single path routing such as Data Reliability: which is defined as ratio of amount of data which is received by destination node to quantity of data that is sent by source node. Multipath routing enhances data reliability by means of sending the data all along numerous redundant paths. Even if several paths fail, data will contain an extremely high possibility to be received by destination node. Multipath routing approach is employed to make progress from failures and helps load balance to keep away from network congestion, which gets better data reliability. Data Security: Multipath routing can get better security for the reason that of nature of multiple paths. By means of multipath routing, malicious attacks are counter measured by means of increasing confidentiality as well as robustness of the data that is conveyed. By incorporating the coding method with multipath routing, data is transmitted in an encoded structure and merely decoded at the destination node, which put off eavesdrop on sensing data throughout transmission. This approach is proficient and is a perfect mechanism in a resource constrained background since it requires very less energy in encoding as well as decoding than in communications [3]. Energy-Efficient: Wireless sensor nodes contain restricted energy supply; consequently

capable usage of energy is essential to exploit the network duration. Load distribution by means of multipath routing helps to get better network duration by delaying appearance of network partition, even though more data could be conveyed than that by means of single path routing as a result, load can be circulated to multiple paths and every path transmits very less data when compared with a finest single path. In multipath routing, to attain similar level of reliability, with assistance of network coding as well as multiple paths, acknowledgment and re-transmission are avoided, lessening message overhead in addition to providing a longer network duration [4].

3. AN OVERVIEW OF PROTOCOLS CONCERNING MULTIPATH ROUTING

The most important rationale of multipath routing approach is to accomplish data reliability, security as well as load balancing. Multipath routing is a different routing method, which chooses several paths for distribution of data from source towards destination. A variety of techniques have been projected in designing proficient multipath routing protocols. Fig1 shows existing multipath routing procedures into three categories such as: Infrastructure based multipath routing procedures which find out and keep up multiple paths from source towards destination earlier than data transmission, and the entire data are transmitted by means of those which are discovered multiple paths. The most significant features of infrastructure based multipath routing method is safeguarding of several paths from the source in the direction of destination and provides reliable and speedy data transmission since every intermediate node of data routing contain its subsequent hop set up beforehand. It moreover provides the procedure dropping failure recovery time by means of assigning the optional route, which is moreover discovered in advance. Non-infrastructure based multi- path routing procedures do not attempt to set up and maintain multiple paths; instead, they transmit data to numerous next hops based on basis of the local heuristic information [5]. Protocols which do not build any infrastructure to convey the data are measured as non-infrastructure multipath routing protocols and in these the path is revealed as data packet moves forward. One of the most important concerns of non-infrastructure multipath routing is forwarding data packet towards sink which protects the packet from looping in network which not only causes important delay in packet delivery, but moreover wastes lots of energy. Coding Based Multipath Routing procedures consists of multipath routing protocols that employ coding techniques in transmission of data [6]. Most important concern of protocols by means of coding technique is to determine number of sufficient paths, since number of fragments sending all the way through several different exposed paths affects decoding procedure directly at the node of destination.

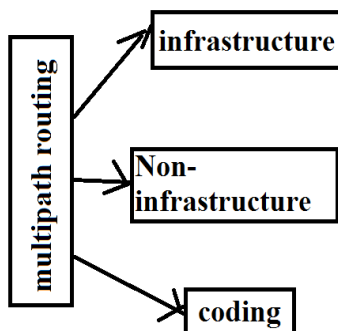


Figure 1: Existing multipath routing procedures.

4. CONCLUSION

Multipath routing is a different routing method, which chooses several paths for distribution of data from source towards destination. Due to nature of multipath routing that employs redundant paths, multipath routing can mostly deal with security, reliability as well as load balancing issues thus, multipath routing plays a significant responsibility in wireless sensor networks. By means of multipath routing we can utilize the obtainable resources at every node more resourcefully. Multipath routing can prevail over important drawbacks concerning single path routing method since it can make available consistent data transmission, constant distribution of network traffic, as well as data security. Many procedures of multipath routing were put forward in the literary of wireless systems. In our work we put forward the protocols of multipath routing and the advantages in terms of security, reliability as well as load balancing issues. Multipath routing approach is employed to make progress from failures and helps load balance to keep away from network congestion, which gets better data reliability. By means of multipath routing, malicious attacks are counter measured by means of increasing confidentiality as well as robustness of the data that is conveyed.

REFERENCES

- [1] P. Kamat, Y. Zhang, W. Trappe, and C. Ozturk, "Enhancing Source-Location Privacy in Sensor Network Routing," Proc. IEEE 25th Int'l Conf. Distributed Computing Systems (ICDCS '05), pp. 599- 608, 2005.
- [2] C. Ozturk, Y. Zhang, and W. Trappe, "Source-Location Privacy in Energy-Constrained Sensor Network Routing," Proc. Second ACM Workshop Security of Ad Hoc and Sensor Networks (SASN '04), pp. 88- 93, 2004.
- [3] Y. Ouyang, Z. Le, G. Chen, J. Ford, F. Makedon, and U. Lowell, "Entrapping Adversaries for Source Protection in Sensor Networks," Proc. IEEE Seventh Int'l Symp. World of Wireless, Mobile and Multimedia Networks (WOWMOM '06), pp. 32-41, 2006.

- [4] X. Wang, X. Li, Z. Wan, and M. Gu, "CLEAR: A Confidential and Lifetime-Aware Routing Protocol for Wireless Sensor Network," Proc. IEEE 20th Ann. Int'l Symp. Personal, Indoor and Mobile Radio Comm. (PIMRC '09), pp. 2265-2269, 2009.
- [5] Y. Li and J. Ren, "Source-Location Privacy through Dynamic Routing in Wireless Sensor Networks," Proc. IEEE INFOCOM, pp. 1-9, 2010.
- [6] Y. Xi, L. Schwiebert, and W. Shi, "Preserving Source Location Privacy in Monitoring-Based Wireless Sensor Networks," Proc. IEEE 20th Int'l Parallel & Distributed Processing Symp. (IPDPS '06), pp. 1-8, 2006.

