



AN ENHANCED DYNAMIC TOKEN PROTOCOL FOR UNDERWATER ACOUSTIC SENSOR NETWORKS

Guangyu Fan^{*1, a}, Jian Li^{2, b}, Wenhong Liu^{3, c}, Yang Zhao^{4, d}

^{1, 2, 3} School of Electronic Information, Shanghai Dianji University, Shanghai 200240, China

⁴ Shanghai Hua Hong NEC Electronics Company, Shanghai 201203, China

Emails: ^{*}afgyright@gmail.com, ^blijian@sdju.edu.cn, ^cliuwenhong@sdju.edu.cn,
^dyangzhao20111@126.com

Submitted: Aug.7, 2012

Accepted: Sep.13, 2012

Published: Dec.1, 2012

Abstract- The properties of underwater acoustic channel are quite different from those of terrestrial wireless sensor networks. There are many challenges to design an efficient media access control (MAC) protocol for underwater acoustic sensor networks (UWASNs). In order to overcome the long propagation delay and low available bandwidth of UWASNs, an enhanced dynamic token protocol (EDTP), is proposed in the paper. It uses token passing queue (TPQ) and TPQ backup method to transfer the token packets dynamically and efficiently, leading to improving the channel efficiency of the networks. Simulation results show that compared with the existing protocols, the proposed protocol can achieve a high throughput, a low packet drop ratio, and a low transmission delay.

Index terms: Underwater acoustic sensor networks (UWASNs), enhanced dynamic token protocol (EDTP), token passing queue (TPQ).