Broadcast Authentication for Vehicular Ad Hoc Networks

Kanika Grover

Graduate Student, Department of Computer Science and Software Engineering
Auburn University, Auburn, AL

Abstract

There has been a rapid rise in the broadcast transmission in vehicular ad hoc networks; for messages like road congestion or intersection collision warnings. Since vehicular networking integrates the wireless as well as mobility aspects of computing, it becomes non-trivial to handle the integrity of these transmissions. Hence, authentication of broadcast messages emerges as an important area of research. IEEE 1609.2 security standard for Vehicular adhoc networks recommend the use of ECDSA digital signatures for authenticating broadcast messages.

Considering time bound VANET broadcast messages transmitted at the rate of 10Hz, authenticated using complex ECDSA verification and in the presence of signature flooding, it becomes necessary to develop a broadcast authentication scheme using probabilistic verification for high mobility vehicles to reduce overhead. Therefore, we provide extensive simulations and analysis of digital signature authentication in vehicular ad hoc networks. With ns-2 simulations we show the performance of our algorithm in comparison to recommended security standard.

Bio

Kanika Grover is a graduate student at the Department of Computer Science and Software Engineering, Auburn University. She received her Bachelor's and Master's degree in Information Technology from India in 2005 and 2007 respectively. She is currently pursuing her doctoral degree at Auburn under the guidance of her advisor, Dr. Alvin Lim. Her active area of research includes broadcast authentication in vehicular networks, security measures in wireless sensor networks and mobile and pervasive computing.

MONDAY, OCTOBER 14, 2013, 4:00 P.M.

235 BROUN HALL

http://www.eng.auburn.edu/~pagrawal/seminar/2013/index.html