Abstract

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Maintaining location privacy and anonymity for vehicle’s drivers in VANET

Vehicular Ad-hoc Network (VANET) is an emerging technology that aims at providing both safety and comfort for drivers. One of the most important evolving VANET applications is Location-Based Services (LBS). These applications require providing continuous user location s to untrusted Location-Based Service Providers (SPs), in order to provide real-time services. However, this leads to tracking and identification of users, and thus breaching privacy of vehicle drivers. In this paper, we propose a solution that maintains location privacy of a user and anonymity when using real-time applications, while taking into consideration constraints posed by VANET. Our scheme uses group navigation combined with the use of mobility prediction and prospective path confusion, in order to mitigate tracking of vehicles and provide real-time anonymization for drivers. Besides that, we propose an “n-1 key forwarding mechanism” that is used for secure and private renewal of vehicle's key pairs. In addition, we provide a “Blind LBS Provider” in our approach that has zero-information about a vehicle and blindly provides a service to a vehicle. In our solution, we also provide a variety of techniques to enhance security and privacy of vehicle’s driver that include: timestamps, Reqmask, message signing and encryption. Moreover, our scheme offers additional benefits to vehicles, and provides a variety of security services while avoids well-known attacks in VANET. Our approach provides protection against both internal and external adversaries. Finally in this paper, we analytically evaluated our work using different location privacy metrics and simulated our …