RAR: Risk Aware Revocation mechanism for Vehicular Networks

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***Abstract*—Security is vital for the reliable operation of vehicular ad hoc networks (VANETs). One of the critical issues is the latency involved in a handover from one road-side unit (RSU) to another. This latency is highly affected by the authentication process. However, existing security mechanisms add complexity and overhead to handover management. Hence, it is essential to achieve both efficiency and security at the same time. The IEEE 802.11p standard for short to medium range vehicular communication does not guarantee efficient handoffs.**

***Index Terms*—VANET, Handoff, security.**

I. Introduction

Vehicular ad-hoc networks (VANETs) have recently attracted extensive attentions as a promising technology for revolutionizing the transportation systems. VANETs consist of entities including On-Board Units (OBUs) and infrastructure Road-Side Units (RSUs). Mobile nodes are capable of communicating with each other (i.e. Vehicle to Vehicle Communication -V2V communication) and with the RSUs (i.e. Vehicle to Infrastructure Communication -V2I communication). Multihop communication facilitates information exchange among network nodes that are not in direct communication range [1], [2], by means of short range wireless technology based on IEEE 802.11p.

However, one drawback to IEEE 802.11p is the length of time it takes to authenticate to an access point (RSU), due to the execution of complex cryptographic algorithms between the client (also known as a "station" or "STA"), AP, and backend Authentication, Authorization, and Accounting (AAA) server. This makes it difficult to support real-time networking protocols, such as streaming multimedia, as a mobile user transitions from one AP to another.

Acknowledgments

This work is funded by the Spanish Ministry of Science and Education under the projects CONSOLIDER-ARES (CSD2007-00004) and TEC2011-26452 "SERVET", and by the Government of Catalonia under grant 2009 SGR 1362.

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