

# Performance Comparison of AODV and OLSR in urban VANET scenarios

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**Abstract.** This paper presents a comparison of two routing protocols and discusses their suitability for Vehicular Ad-hoc Networks (VANET). In the paper we show a comparison between AODV and OLSR through realistic simulations of high density VANETs in urban environments. This study is conducted as a part of the COM2REACT European project (FP6-2004-IST-4-027071). COM2REACT aim is to establish and test a scalable, cooperative, multi-level road transport supporting system involving two-way Vehicle to Vehicle (V2V) communication and two-way Vehicle to Infrastructure (V2I) communication, and incorporating the innovative Virtual Sub-Centre (VSC) concept for local, short-term traffic control. Together, these will facilitate significant improvement in the flow of information acquired by moving vehicles and in its quality and reliability, thereby enhancing road efficiency and traffic safety on urban, intercity arterials and rural roads.

The VSC communication layer resides above the ISO's Network layer. The majority of the ad-hoc routing protocols operate in the Network layer. In this paper we analyse the suitability of two MANET routing protocols to permit the inter-vehicular communication (IVC) at the VSC layer. In urban scenarios there is, typically, a high density of nodes that want to communicate with some others producing a high stress to the network layer. COM2REACT technology is IEEE 802.11b (WiFi) based but uses high power wireless cards and high gain omnidirectional antennas. The increase of the transmitted power produces higher interferences in other nodes, especially in urban scenarios, where continuous signal reflections are produced by the surrounding buildings. We analyse and compare the suitability of AODV and OLSR for the COM2REACT technology in a high density (vehicles and network traffic) urban scenario. Our simulations demonstrate the suitability of both protocols in stressful conditions: hundreds of cars in a small urban scenario and in high network traffic conditions.

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