Performance enhancement of NEMO based VANET using localization router (LR) to reduce handoff delays

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Abstract
Vehicular Ad hoc Networks (VANETs) combined with vehicle-to-vehicle and vehicle-to-infrastructure communications can be considered as the most suitable technology to enable ITS (Intelligent Transport System) application bestowed upon travelers with mobility, safety and productivity with human comfort. As delay-sensitive ITS application, handoff delay and packet losses are critical parameters for maintaining seamless connectivity in VANET solution. During handoff, when mobile node (vehicle) is acquiring new CoA (care of address) packets directed to that node are lost because the old identity is no more valid. So in a high speed dynamic vehicular environment the number of frequent handoffs would produce delay beyond the normal limit. Therefore, it is very important to resolve the issue of handoff latency and packet losses in VANET environment. As a solution, a domain based SSDIV (Sub domain Identifiers Validity) scheme is proposed in this paper. Number of vehicles moving towards the road are divided into dominant areas where network mobility is high. SSDIV scheme is applied in a vehicle is selected as HM (master router) and connected to the RSU (road side unit) via the internet and other vehicles in the domain work as LM (localization routers) and communicate through RSU. Simulation tests performed in NS3 (network simulator) and MATLAB SIMULINK demonstrate that using SSID (localization router) in the domain, the number of handoffs and handoff delay are significantly reduced.

Author keywords
Network mobility, SSIDV, VANET

Funding details
Funding number: 01-04-2015-ID01
Funding sponsor: Ministry of Higher Education, Malaysia

ISSN: 2503-4713
Source journal: International Journal of Electrical Engineering and Computer Science

DOI: 10.1515/ejesi-2015-0211
Document type: Article
Publisher: Institute of Advanced Engineering and Science

References (25)


Cited by 1 document

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Amin, A.H.A.; Hadi, J.; Ramli, R.; Raman, R.M.
(2015) 5th International Wireless Communications and Mobile Computing Conference

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