Indonesian Journal of Electrical Engineering and Computer Science
Volume 8, Issue 2, November 2017, Pages 511-521

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

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Abstract

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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 travellers with mobility, safety and productivity with human comfort. As a delay sensitive ITS application, handoff delays 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 towards that node are lost; because it's old identity is no more valid. So in 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 issues of handoff delay and packet losses in VANET environment. As a solution, a domain based RHD-NV (Reducing Handoff Delay in NEMO based VANET) scheme is proposed in this paper. Number of vehicles moving towards the road constructs a domain where network mobility NEMO-BS protocol is applied. A vehicle is selected as MR (master router) and connected to the RSU (road side unit) to the internet and other vehicles in the domain work as LRs (localization router) and communicate through MR. Simulation tests performed in NS3 (network simulator) and MATLAB SIMULINK demonstrate that using LRs (localization router) in the domain, the number of handoffs and handoff delay are significantly reduced.

Author keywords

Intelligent transport system NEMO V2I V2V VANEMO VANET

Funding details

Funding number	Funding sponsor	Acronym
RIGS16-084-0248	Ministry of Higher Education, Malaysia	MOHE

Funding text

The authors gratefully acknowledge the financial support of IIUM Research Management Centre (RMC) and Ministry of Higher Education Malaysia under Research Initiative Grant Scheme (RIGS) number RIGS16-084-0248.

ISSN: 25024752
Source Type: Journal
Original language: English
DOI: 10.11591/ijeecs.v8.i2.pp511-521
Document Type: Article
Publisher: Institute of Advanced Engineering and Science

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