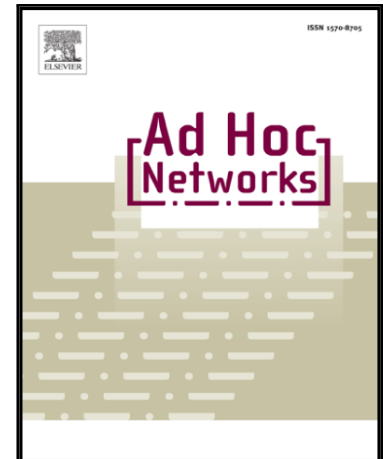


Journal Pre-proof

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PII: S1570-8705(19)30416-0
DOI: <https://doi.org/10.1016/j.adhoc.2019.102039>
Reference: ADHOC 102039



To appear in: *Ad Hoc Networks*

Received date: 26 April 2019
Revised date: 10 September 2019
Accepted date: 7 November 2019

Please cite this article as: Xuening Liao, Yuanyu Zhang, Zhenqiang Wu, Xiaohong Jiang, Buffer-Aided Relay Selection for Secure Two-Hop Wireless Networks with Decode-and-Forward Relays and a Diversity-Combining Eavesdropper, *Ad Hoc Networks* (2019), doi: <https://doi.org/10.1016/j.adhoc.2019.102039>

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Buffer-Aided Relay Selection for Secure Two-Hop Wireless Networks with Decode-and-Forward Relays and a Diversity-Combining Eavesdropper

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Abstract

This paper investigates the buffer-aided relay selection issue for achieving physical layer security (PLS) in two-hop wireless networks with Decode-and-Forward (DF) relays. Available works mainly focus on scenarios with independent-decoding eavesdroppers. However, the more hazardous scenarios with diversity-combining eavesdroppers that combine the signals in two hops to decode the packets are largely ignored. This paper considers a two-hop wireless network with multiple DF relays and one diversity-combining eavesdropper under two cases with perfect and partial eavesdropper channel state information (CSI) respectively. We first propose two secure buffer-aided relay selection schemes to suppress the eavesdropper for both eavesdropper CSI cases respectively. We then derive analytical expressions for the end-to-end (E2E) secure transmission probability (STP) and E2E delay of the network. Finally, we provide extensive simulation and numerical results to validate the correctness of the expressions and also to investigate the E2E STP and E2E delay performances. The results showed that the proposed

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