RESEARCH ARTICLE

RELAY SELECTION FOR SECURE CO-OPERATIVE NETWORKS WITH JAMMING

Lakshmipraba.K[1], Nithya Devi.S[2], Praveen.P[3], Suresh Kumar.M[4], Mrs.V.Vennila[5]

[1,2,3,4]Department of Computer Science and Engineering, Anna University Chennai, India
[5]Assistant Professor, Department Of Computer Science and Engineering,
K.S.R. College Of Engineering, Tiruchengode, India

[1] lakshmiruthu@gmail.com; [2] snithyadevibe@gmail.com; [3] praveensft13@gmail.com;
[4] ssksuresh2010@gmail.com; [5] vennview@yahoo.co.in

Abstract— In this proposed system, we investigate joint relay and jammer selection in two-way cooperative networks, consisting of two sources, a number of intermediate nodes, and one eavesdropper, with the constraints of physical-layer security. Specifically, the proposed algorithms select two or three intermediate nodes to enhance security against the malicious eavesdropper. The first selected node operates in the conventional relay mode and assists the sources to deliver their data to the corresponding destinations using an amplify-and-forward protocol. The second and third nodes are used in different communication phases as jammers in order to create intentional interference upon the malicious eavesdropper. First, we find that in a topology where the intermediate nodes are randomly and sparsely distributed, the proposed schemes with cooperative jamming outperform the conventional non jamming schemes within a certain transmitted power regime. We also find that, in the scenario where the intermediate nodes gather as a close cluster, the jamming schemes may be less effective than their non-jamming counterparts. Therefore, we introduce a hybrid scheme to switch between jamming and non-jamming modes. Simulation results validate our theoretical analysis and show that the hybrid switching scheme further improves the secrecy rate.

Key Terms: - Cooperative jamming; friendly jammer selection; physical-layer security; relay selection, two-way relay

Full Text: http://www.ijcsmc.com/docs/papers/April2013/V2I4201352.pdf