

Performance Evaluation of the TSS Node Authentication Scheme in Noisy MANETs

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Abstract. This paper presents a description and performance evaluation of the threshold secret sharing (TSS) node authentication scheme for self-securing ad hoc wireless networks suffering from high packet-loss due to presence of noise and node mobility, which are referred to as noisy MANETs. In order to evaluate the performance of the TSS scheme in noisy MANETs, a number of simulations were carried-out to investigate the variation of the authentication success ratio against the threshold secret share for various node densities, node speeds, and noise-levels. Simulation results demonstrated that, for certain threshold secret share, presence of noise inflicts significant reduction in the authentication success ratio, while node mobility inflicts no or insignificant effect. The outcomes of these simulations are so important to facilitate efficient network management.

Keywords: MANET; noisy wireless networks; node authentication; Shamir's secret share, threshold secret sharing; certification authority.