

Scalable MAC Strategy for Emergency Communication Networks

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Due to the advancement of wireless communication, the wireless devices increase tremendously in Emergency Communication Networks (ECNs) for various purposes such as search and rescue activities, military applications, digester management, etc. The domain of this network varies from small to large scale based on the devastation area or influence zone of the scenario (i.e., if the devastation area is small then it needs to set a small network; otherwise, it requires to set a big network in order to achieve the goal). Scalability is an important issue that needs to be ensured for this network. If a solution of a small-scale network is also feasible while the network is getting larger, the solution is called scalable. Collision and congestion are two main concerning issues for designing a scalable ECN. It is an emerging research area to explore a dynamic approach that adapts the behavior of the networks so that the same solution will work for both small and large networks. In order to address this issue, this paper proposes a dynamic CSMA/CA-based salable MAC strategy for ECNs in particularly for search and rescue activities. The simulation results prove the efficiency and effectiveness of the proposed MAC approach.

Keywords: Scalability, MAC Strategy, Emergency Communications Networks, Congestion and Collision Problem.