A 5G Architecture Based to Dynamic Vehicular Clustering Enhancing VoD Services Over Vehicular Ad hoc Networks

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Abstract : Nowadays, video-on-demand (VoD) applications are becoming one of the tendencies driving vehicular network users. In this paper, considering the unpredictable vehicle density, the unexpected acceleration or deceleration of the different cars included in the vehicular traffic load, and the limited radio range of the employed communication scheme, we introduce the "Dynamic Vehicular Clustering" (DVC) algorithm as a new scheme for video streaming systems over VANET. The proposed algorithm takes advantage of the concept of small cells and the introduction of wireless backhauls, inspired by the different features and the performance of the Long Term Evolution (LTE)- Advanced network. The proposed clustering algorithm considers multiple characteristics such as the vehicle's position and acceleration to reduce latency and packet loss. Therefore, each cluster is counted as a small cell containing vehicular nodes and an access point that is elected regarding some particular specifications.