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3.2.2. Controlling the number of hops; 3.2.3. Controlling the number of nodes; 3.2.4. Role of the clusterhead; 3.3. Mobility-based clustering in ad hoc vehicular networks; 3.3.1. The dynamics of vehicular traffic in VANETs; 3.3.2. Clustering according to the lane; 3.3.3. Clustering depending on the relative speed between the vehicles; 3.3.4. Clustering depending on the direction of the movement (movement-based); 3.3.5. Clustering depending on the radio link quality; 3.3.6. Clustering depending on speed and relative speed
3.3.7. Clustering depending on the position,speed and direction 3.4. Clustering of VANETs for MAC and transport applications; 3.4.1. Cluster-based MAC protocol; 3.4.2. Clustering for transport applications; 3.5. CONVOY: a vehicle convoy formation protocol; 3.5.1. Intra-convoy communication protocol; 3.5.2. Convoy formation algorithm; 3.6. Assessment of the convoy formation protocol; 3.6.1. Optimal parameters of the algorithm; 3.6.2. Distribution of the length of convoys; 3.6.3. Convoy stability; 3.7. Conclusion; 3.8. Bibliography Chapter 4. Complementarity between Vehicular Networks and LTE Networks 4.1. Introduction; 4.2. State of the art; 4.3. General description of the proposed architecture; 4.3.1. Network organization mechanisms for areas completely covered by LTE; 4.3.2. Network organization mechanisms forareas that are not completely covered by LTE; 4.3.3. Information collection application: LTE4V2X-C; 4.3.4. Information dissemination application:LTE4V2X-D; 4.4. Detailed description of the LTE4V2X-C protocol; 4.4.1. Initialization phase; 4.4.2. Maintenance; 4.4.3. Extension for the areas not covered by the LTE
4.5. A detailed description of the LTE4V2X-D protocol

Sommario/riassunto

Over the last few years vehicular networks have been receiving a lot of attention from academia, industry, standardization bodies, and the various transportation agencies and departments of many governments around the world. It is envisaged in the next decade that the Intelligent Transportation System (ITS) will become an essential part of our daily life. This book describes models and/or algorithms designed to investigate evolutionary solutions to overcome important issues such as congestion control, routing, clustering, interconnection with long-term evolution (LTE) and LTE advanced cellular