# Evaluation of the performance of message routing protocols in delay tolerant networks (DTN) in Colombian scenario

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## Abstract

Certain vehicles need to send information to their monitoring stations constantly, this information is usually sent by the vehicles, through the cellular network. The use of these wireless networks depends on coverage that it is not usually available in all geographic areas. This is the case of road segments where the coverage of data service of cellular networks is partial or zero, making transmission impossible. A particular case is the roads between the municipality of Juan de Acosta and the city of Barranquilla in Atlántico department (Colombia). As a solution, Delay-Tolerant Networks (DTN) emerge, which allow the transmission of data to the monitoring stations when there is no cellular network coverage. In this work, a simulated evaluation of the performance of some message routing protocols for DTN is performed, in the Juan de Acosta – Barranquilla scenario. Using “The Opportunistic Networking Environment”, we determined the performance of these message routing protocols. The results show that the first contact message routing protocol, presents the highest rate of delivery messages (delivery rate) and the lowest delivery latency (delivery latency). In addition, the Spray and Wait protocol presents better results in System message overload (overhead) than the first one. The Opportunistic Networking Environment simulator, the performance of these message routing protocols was determined in this scenario. The results show that the Firstcontact message routing protocol presents the highest rate of delivery (deliveryrate) and the lowest delivery delay (deliverylatency). In addition, the Spray and Wait protocol has a better result in system overhead than the first one.

Keywords: Delay tolerant networks (DTN); Direct delivery; Epidemic; First contact; Routing protocols; Spray and wait