**CoCoWa: A Collaborative Contact-Based**

**Watchdog for Detecting Selfish Nodes**

**Abstract**

Mobile ad-hoc networks (MANETs) assume that mobile nodes voluntary cooperate in order to work properly. This cooperation is a cost-intensive activity and some nodes can refuse to cooperate, leading to a selfish node behaviour. Thus, the overall network performance could be seriously affected. The use of watchdogs is a well-known mechanism to detect selfish nodes. However, the detection process performed by watchdogs can fail, generating false positives and false negatives that can induce to wrong operations. Moreover, relying on local watchdogs alone can lead to poor performance when detecting selfish nodes, in term of precision and speed. This is especially important on networks with sporadic contacts, such as delay tolerant networks (DTNs), where sometimes watchdogs lack of enough time or information to detect the selfish nodes. Thus, we propose collaborative contact-based watchdog (CoCoWa) as a collaborative approach based on the diffusion of local selfish nodes awareness when a contact occurs, so that information about selfish nodes is quickly propagated. As shown in the paper, this collaborative approach reduces the time and increases the precision when detecting selfish nodes.

**Index Terms**—Wireless networks, MANETs, opportunistic and delay tolerant networks, selfish nodes, performance evaluation