

Experimental assessment of the adequacy of Bluetooth for opportunistic networks

D. Contreras, M. Castro

Abstract— Bluetooth ranks among the most widespread technologies in current mobile devices. One of the most promising application fields of Bluetooth is that of the so-called opportunistic networks. In order to assess the validity of Bluetooth for those scenarios we perform systematic experimental tests changing the Bluetooth discovery mode, the number of devices participating in the network (up to 20) and their roles. This discovery stage is crucial for the identification of devices in the range of the network. Our results allow to conclude that in asymmetric cases (where nodes work exclusively as masters or slaves) Bluetooth working in interlaced mode can be clearly used even in the less favorable situations. On the contrary, in opportunistic networks where the nodes must change their role from passive (being found) to active (find other nodes), the higher the size of the network the higher the times needed to remain in each inquiry, so the parameters of the devices need to be set according to the application in mind. These results help to introduce alternative strategies to overcome the lack of knowledge about the entry of devices into the network range and the number of them to be discovered. Finally, we compare the effect of performing the experiments inside a Faraday cage or in a contaminated environment and that the standard network simulator (ns-2) does not capture the complexity of the experiments.

Index Terms— Opportunistic networks; Bluetooth; Discovery; Inquiry; Interference; Interlaced

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to Ad Hoc Networks, you can download the paper from the journal website:

[Access to the Journal website](#)

Citation:

Contreras, D.; Castro, M.; "Experimental assessment of the adequacy of Bluetooth for opportunistic networks", Ad Hoc Networks, vol.25, no.B, pp.444-453. February, 2015.