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Emergency Ad-Hoc Networks by Using Drone Mounted Base Stations for a Disaster Scenario

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Abstract—In case of a large scale disaster, the wireless access network can become quickly saturated. This is of course undesirable because for this kind of situations we actually need a reliable wireless connectivity. In this study, the potential of mounting LTE femtocell base stations on drones to offer an alternative for the saturated existing wireless infrastructure is investigated. Our preliminary results show that this is a very promising approach although a high amount of drones are needed to cover all users in the city center of Ghent, Belgium during a 1h intervention. The number of drones can be significantly reduced (up to 64%) by using a more advanced type of drone, by decreasing the user coverage requirement (11% less drones when requiring 80% instead of 90%) or by increasing the fly height of the drones (about 10% less drones needed when increasing the fly height by 10 m). This study shows that it is interesting to further investigate the use of drones to provide an emergency wireless access network.

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