

io-port 02171472**Karimou, Djibo; Myoupo, Jean Frédéric****An application of an initialization protocol to permutation routing in a single-hop mobile ad hoc networks.**

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Summary: In 1999 *K. Nakano, S. Olariu, and J. L. Schwing* [“Broadcast-efficient protocols for mobile radio networks”, IEEE Trans. Parallel Distrib. Syst. 10, 1276–1289 (1999)] showed that the permutation routing of n items pretitled on a mobile ad hoc network (MANET for short) of p stations (p known) and k channels (MANET(n, p, k)) with $k < p$, can be carried out in $\frac{2n}{k} + k - 1$ broadcast rounds if $k \leq p$ and if each station has $O(\frac{n}{k})$ memory locations. And if $k \leq \sqrt{\frac{p}{2}}$ and if each station has $O(\frac{n}{p})$ memory locations, the permutations of these n pretitled items can be done also in $\frac{2n}{k} + k - 1$ broadcast rounds. They used two assumptions: first they supposed that each station of the mobile ad hoc network has an identifier beforehand. Secondly, the stations are partitioned into k groups such that each group has $\frac{p}{k}$ stations, but it was not shown how this partition can be obtained. In this paper, the stations have no identifiers beforehand and p is unknown. We develop a protocol which first names the stations, secondly gives the value of p , and partitions stations in groups of $\frac{p}{k}$ stations. Finally we show that the permutation routing problem can be solved on it in $O(\frac{p}{\ln 2}) + (\frac{2}{k} + 1)n + k - 1$ broadcast rounds in the worst case. It can be solved in $O(\frac{p}{\ln 2}) + (\frac{2}{k})n + k - 1$ broadcast rounds in the better case. Note that our approach does not impose any restriction on k .

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