On the Method of Modified Blueweb: A Decenteralized Bluetooth Scatternet Formation Algorithm

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Abstract

In the paper, a decentralized scatternet formation algorithm called Modified Blueweb is proposed. Modified Blueweb is a tier-based method to determine new roots and each new root spontaneously generates their individual web-shaped subnets. First, Modified Blueweb uses a designated root to construct a tree-shaped subnet and propagates a counter limit kl as well as a constant k in its downstream direction to determine new roots. Then each new root asks its upstream master to start a return connection procedure to convert the tree-shaped subnet into a web-shaped subnet for its immediate upstream root. At the same time, each new root repeats the same procedure as the designated root to build its own subnet until the whole scatternet is formed. Simulation results show that the subnet size can be controlled by appropriated selecting the k parameter and each root manages its subnet decentralized. Therefore, Modified Blueweb achieves good network scalability and generates an efficient scatternet configuration for various sizes of Bluetooth scatternet.

Keyword：Bluetooth, ad hoc network, scatternet formation, network scalability