HMT:A Hybrid Mesh Tree Approach in Forming Bluetooth Networks

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Abstract

In this paper, we present hybrid mesh tree, a new scatternet formation algorithm for Bluetooth ad hoc networks. The hybrid mesh tree constructs a mesh-shaped topology in one dense area and extended by tree-shaped topology in the other areas. First, hybrid mesh tree uses a designated root to construct a tree-shaped subnet and propagates 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 first tree-shaped subnet into a web-shaped subnet. At the same time, each new root repeats the same procedure as the designated root to build its own tree-shaped subnet until the whole scatternet is formed. Simulation results show that the subnet size can be controlled by appropriated selecting the k parameter. Besides, hybrid mesh tree achieves better network performance than Bluetree and generates an efficient scatternet configuration for various sizes of Bluetooth scatternet.

Keyword：Bluetooth, Ad hoc networks, Scatternet formation