Forming Mesh Topology for Bluetooth Ad Hoc Networks

余誌民, 洪紹凱, 陳昱志
Communication Engineering
Engineering
ycm@chu.edu.tw

Abstract

In this paper, a heuristic algorithm in forming Bluetooth mesh topology is presented. The algorithm forming the scatternet includes two stages. In the first stage, a root node begins to create a conventional tree-shaped topology. In the second stage, a backward connection mechanism is introduced to increase more connection paths and to convert the tree-shaped into a web-shaped topology. The mechanism contains two connection models including the master/slave web (MSW) and the slave/slave web (SSW) models. The MSW model connects additional intermediate master/slave nodes and the SSM model interconnects more leaf nodes as well as both models build the web-shaped topologies. These two models are implemented in the heuristic algorithm to construct a mesh-shaped topology. Simulation results show that the mesh topology effectively reduces the path length than a tree and a hybrid ring-tree scatternet. As a result, the heuristic algorithm contains both MSW and SSW models as well as generates an efficient mesh topology for Bluetooth-based ad hoc networks.

Keyword：Bluetooth, scatternet, mesh, tree