

# A Mesh Topology Approach for Bluetooth Scatternet Formation

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## Abstract

This paper presents the Enhanced Bluetree, a mesh topology scheme for Bluetooth scatternet formation. The scatternet formation algorithm includes two phases. In the first phase, a designated node called the root starts to create a tree-shaped topology and in the second phase the tree-shaped topology is converted into a mesh-shaped topology. In addition, a return connection mechanism is introduced in this phase to generate more connection paths among the nodes. The mechanism contains two scatternet topology models including the slave/slave mesh (SSM) model and the master/slave mesh (MSM) model. The SSM Model builds a mesh-shaped topology by interconnecting more leaf nodes. On the other hand, the MSM Model connects additional intermediate nodes to establish the backbone connection in a mesh-shaped topology. Simulation results show that both the SSM and the MSM of an Enhanced Bluetree more effectively improve the network performance than Bluetree by significantly reducing the average path length.

Keyword : Bluetooth, ad hoc networks, scatternet formation