

Abstract: Due to the limited lifetime of the nodes in ad hoc and sensor networks, energy efficiency needs to be an important design consideration in any routing algorithm. It is known that by employing a virtual backbone in a wireless network, the efficiency of any routing scheme for the network can be improved. One common design for routing protocols in mobile ad hoc networks is to use positioning information; we use the node-s geometric locations to introduce an algorithm that can construct the virtual backbone structure locally in 3D environment. The algorithm construction has a constant time.