

Abstract

Wireless Sensor Network (WSN) consists of number of wireless nodes in which all nodes are energy constrained, designing routing protocol and good topology control algorithm are fundamental issues in wireless sensor networks. As there is no physical backbone infrastructure in case of wireless network, a virtual backbone is formed by constructing a Connected Dominating Set (CDS). The CDS simplifies routing by restricting the main routing path on the dominators only. A good CDS should first and foremost be small in size and possess some other characteristics such as robustness to node failure. A small size CDS decrease the protocol overhead and energy consumption of the network.

Sensors are generally equipped with data processing unit and communication unit which are used to send/forward the collected/received data from source to destination. The sensors are used for collecting physical parameters such as temperature, sound, light intensity, pressure etc. which can be used to forecast, detect or predict harsh natural phenomena. Large number of CDS construction algorithms has been suggested by using various approaches and criterions.

In this project, we studied CDS construction and proposed an algorithmic approach for maintaining the CDS on sensor node failure. CDS reconstruction is not possible in a graph in which failure of any CDS node of the graph results in disconnection of the graph, for example tree. However, CDS reconstruction is always possible if the deletion of a CDS sensor nodes doesnot result in disconnection of the underlying graph.