A Novel Biased Energy Distribution (BED) Technique for Cluster-Based Routing in Wireless Sensor Networks

A. F. Salami[1], H. Bello-Salau[1], F. Anwar[1], A. M. Aibinu[2]

[1]Department of Electrical and Computer Engineering

[2]Department of Mechatronics Engineering

International Islamic University Malaysia

P. O. Box 10, 53100, Gombak, Malaysia.

Emails: {kermkerm1, hbellosalau, farhat_anwar, maibinu}@yahoo.com

Submitted: ***March 30, 2011*** ***Accepted: May 19, 2011*** ***Published: June 1, 2011***

Abstract - This paper presents the impact of utilizing a biased energy distribution (BED) scheme for clustering sensor networks. In clustering sensor networks, some of the nodes are elected as aggregators and they compress the data from their cluster members before sending the aggregated data to the sink. Existing clustering routing protocols assume that all the nodes are provided with equal amount of energy but this shortens the network lifetime and makes the network unstable. This paper proposes a solution prioritizing the network into higher and lower energy nodes. The aim of this approach is to ensure well balanced energy consumption in order to maximize network lifetime. It is shown by simulation that the proposed technique exhibits better performance when compared to existing clustering routing techniques in terms of throughput, network lifetime and energy consumption.

Index terms*:* Sensor network, clustering routing techniques, biased energy distribution, network prioritization.