Abstract

Wireless Sensor Networks (WSNs) consist of several sensor nodes equipped with limited power sources that sense environments event and transmit data to the sink node. WSNs have many constraints including energy, redundant data, and many-to-one flows. Data aggregation is one of the most important issues for achieving energy-efficiency in wireless sensor networks. Sensor nodes in the surrounding region of an event may generate redundant sensed data. A data aggregation technique in WSNs focuses on decreasing the energy consumption by reducing the amount of data that needed to be sent to the sink node. In this paper, we propose an M/M/1 queuing model for evaluating energy consumption in WSNs with data transmission. The proposed model can help designers to evaluate the energy consumption of cluster based wireless sensor network with data aggregation. We compare the energy consumption results
for networks with and without data aggregation technique.

References

- G. Bolch, S. Greiner, H. de Meer, and K. S. Trivedi, "Queueing Network and

**Index Terms**

Computer Science  Wireless

**Keywords**

Wireless sensor networks  data aggregation  M/M/1 queuing model  energy consumption