DESIGN AND IMPLEMENTATION OF WIRELESS TECHNOLOGIES TO CREATE WIRELESS SENSOR NETWORK USING OMNET++

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ABSTRACT

Sensor technologies are vital today in gathering information about certain environments and wireless sensor networks are getting more widespread use everyday.

Wireless sensor networks (WSNs) are characterized by low-cost low-energy nodes, whose battery is normally not replaced during network lifetime. Nodes sense the environment and are equipped with radio transceivers which allow them to act as both transmitters and route-and-forward devices. Typical applications include a sink, which periodically triggers the WSN, and a large number of nodes deployed without detailed planning in a given area.

Keywords: Wireless sensor networks, low-cost low-energy nodes, radio transceivers.

1. INTRODUCTION

The recent years have seen the explosion of new wireless networking solutions design and corresponding first deployments in real life. However complex hardware-software systems such as wireless sensor networks [1]-[4] are best evaluated with actual deployed hardware and software, as they often involve complex interactions between system components that are difficult to capture completely with evaluation techniques such as simulation. The creation and deployment of complete systems is, however, costly, time consuming, and requires a substantial amount of domain expertise. Due to these and other challenges posed by developing, deploying, and evaluating hardware and software, it is often desirable to capture properties and behaviors of particular aspects of a system with models. In this study, we illustrate the trade offs by various combinations of the sensor network parameter values. A simulation tool, which helps in analyzing the effects of the parameters on sensor network lifetime is designed for this purpose and implemented by means of a discrete event simulator environment, OMNeT++.

2. REFERENCES

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