Technische Universität München
Lehrstuhl für Netzarchitekturen und Netzdienste
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Thesis (B.Sc./M.Sc.)

IP-based Communication in Wireless Sensor Networks

Motivation

Wireless communication gains more and more interest in the industry since the latest generation of wireless sensor devices achieves a high reliability and long lifetime. In addition, the devices support a high data rate which allows building large networks while maintaining a low delay. Therefore, WSNs for have become a competitive solution under economical aspects for their wired counterparts. However, the effort of integration of WSNs into existing networks / monitoring applications is quite high since most sensor solutions do not support IP communication. Thus, seamless IP communication is desired in order to allow direct access of the sensor nodes from the Internet. The development of an IP stack for sensor networks is a challenging task due to limited memory resources.

Your Task

Your task consists of the following steps.

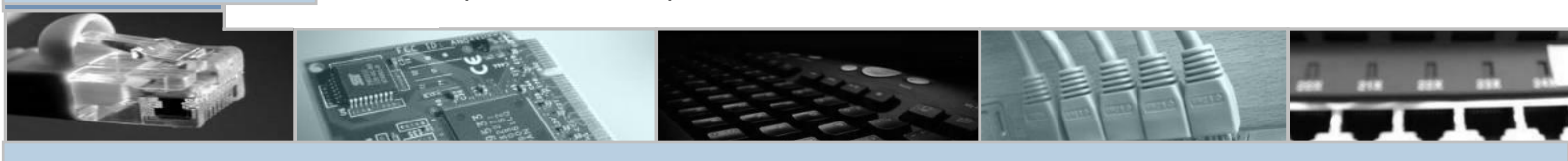
1) Collect information about existing IP stacks
2) Get familiar with TinyOS and nesC
3) Implement a basic IP/UDP stack
4) Implement a remote interface for efficient performance measurement (link and path)
5) Built two test scenarios in order to evaluate the performance of your system in terms of protocol overhead and memory consumption

Requirements

Previous knowledge of wireless communication issues and computer networks is useful but not required since you will be provided with the corresponding information and tutorials. Some knowledge of C will give you a clear advantage.

Keywords

Internet Protocol, Routing, Wireless, Sensor, Network, Measurement, Testbed



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