

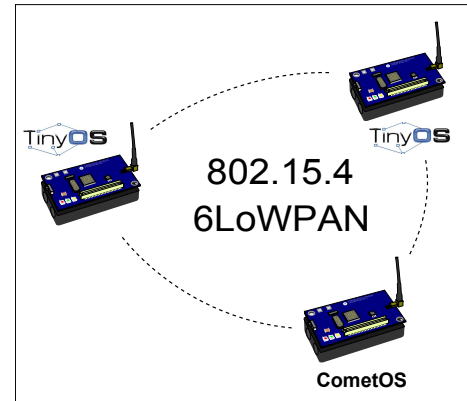
Bachelor's Thesis

« Realization of Link-Layer Interoperability for IPv6 in Heterogenous Sensornode Platforms »

Background

To realize the vision of the Internet of Things, various efforts are undertaken to bring the internet protocol even to the most resource-constrained devices such as wireless sensor nodes. One important building block is the 6LoWPAN protocol which enables transmission of IPv6 datagrams via link layers such as the 802.15.4 protocol.

Although 6LoWPAN has reached RFC status in the meantime, there exist some unsolved questions, especially concerning the forwarding of fragmented IPv6 datagrams via multiple hops. For this reason, an implementation of the 6LoWPAN protocol was created for the CometOS framework to enable the evaluation of performance-improving mechanisms.



Work Description

To be able to validate the implementation and verify its correctness, within this Bachelor's Thesis or project work the interoperability with an existing 6LoWPAN implementation for the TinyOS shall be investigated. This includes the build-up of a mixed testbed from the available hardware at the institute (IRIS motes, ATmega128RFA1), the development of test cases and their execution within the network.

- Investigation about and implementation of necessary adaptations to the existing link layers
- Creation of test cases to validate interoperability
- Build-up and operation of a mixed testbed containing TinyOS and CometOS nodes

Technologies

- 6LoWPAN, 802.15.4
- TinyOS/nesC, CometOS

Prerequisites

- Solid knowledge of the C/C++ programming languages
- Basic knowledge of embedded systems and communication networks

Contact: Andreas Weigel, Martin Ringwelski

andreas.weigel@tu-harburg.de

Phone: +49 40 / 428 78 – 3746

Room: E 4.085