

Master-IT: Project work WS2010/2011

Area: Industrial Communication

Performance investigation of a deterministic medium access mechanism based on IEEE 802.11

start: Immediately
partner: Consortium EU Project „flexWARE – Flexible Wireless Automation in Real-time Environments“

Description

Due to the enormous success of IEEE 802.11 networks in home, office and other environments, their deployment in industrial automation has already begun. However, their application in real-time control remains a challenge due to fact that the state-of-the-art medium access control (MAC) mechanism (called DCF) is inherently random, thus preventing real-time messages to be delivered in a deterministic and repeatable manner. Therefore a MAC mechanism, capable of providing a deterministic access to the medium, needs to be investigated. The proposed mechanism has to provide quality of service guarantees (QoS) to real-time stations, while ensuring backward compatibility with legacy stations and coexistence with non real-time traffic on the network.

Goals

Realization of a first implementation of the proposed mechanism based on an Atheros WLAN chipset and a subsequent evaluation in terms of its performance.

- Usage of an existing development platform
- Extension of an existing Linux device driver
- Evaluation scenario and metric definition
- Evaluation of the mechanism in a real industrial environment
- Propose extensions to the mechanism(s) and provide insight about future work