

Topic for (Software Lab) Project or to work on as a Student Research Assistant

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On-Line Visualization and Experiment Control for IEEE 802.11s WLAN Mesh Networks

The IEEE 802.11s amendment standard enables vendor-independent establishment of a wireless mesh network based on WLAN technology (WLAN Mesh Network - WMN). Since it is completely integrated in the 802.11 MAC layer, 802.11s can be used with conventional WLAN hardware directly above the existing physical layers 802.11 a/b/g/n/ac.

A clustering and channel selection approach (CHaChA) for IEEE 802.11s WMN developed at the University of Rostock was examined for an initial parameterization in various static mesh topologies. Extension of the procedure with mechanisms for the online adaption of existing clusters considering network changes (joining/failure of nodes, regression of link quality, etc.) is subject of current investigations.

The aim of this work is to combine features of several already existing frameworks for network status visualization into a single application and to examine its time behavior during experiments. In a second step, the application needs to be extended with elements for experiment control (parameter definition, start/stop of the experiment, topology change at runtime, etc.).

Summarized, the following tasks have to be solved:

- Familiarization with the basics and the state of the art in the field of distributed clustering and channel selection strategies for WLAN Mesh Networks
- Familiarization with the existing CHaChA procedure for 802.11s WMN
- Conception and implementation of an application for on-line visualization of network status information
- Extension of the application with experiment control elements
- Detailed documentation of all work steps

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