

Modelling and Verification of Protocols for Wireless Networks

Assignment for LabTime

January 16, 2017

Aim of the labtime of this course is to model and verify a given protocol. Ideally, students should team up in groups of up to 3. Teams will report on the experiences of modelling and verifying the protocol during the last session.

The intended learning content is the following:

- read and understand a given specification
- discover and overcome problems such as ambiguities and underspecifications
- create a formal model of the protocol (the (formal) method can freely be chosen; e.g.AWN, networks of timed automata, Petri nets, ...)
- create and formalise critical properties for the protocol
- (prove the properties)

Below is a list of potential protocols to be modelled, analysed and verified. Feel free to choose your own protocol, but please coordinate with either Peter or Ansgar; make sure that you choose a “short and simple” protocol.

RIPng: The *Routing Information Protocol (next generation)* is a routing protocol for wireless networks, based on the Bellman-Ford (or distance vector) protocol. It is standardised by the IETF (Internet Engineering Task Force) as RFC2080 (<https://tools.ietf.org/html/rfc2080>).

CBRP: The *Cluster Based Routing Protocol* is another routing protocol for wireless networks. A speciality of the protocol is that it takes care of uni- and bidirectional links (other protocols often require bidirectional links). Its specification can be found at <https://tools.ietf.org/html/draft-ietf-manet-cbrp-spec-01>.

TORA: The *Temporally-Ordered Routing Algorithm* is a link-reversal routing protocol. <https://tools.ietf.org/html/draft-ietf-manet-tora-spec-04>