Implementation of admission control and resource management for mobile ad hoc networks

Mobile ad hoc networks for military use might consist of several different radio links with varying capacity. A network route from source to destination might for example include HF, VHF, and UHF radio links. These radio links might vary considerably in bandwidth (e.g., several kb/s to several hundred kb/s) and other QoS characteristics. Topology based routing with separate routing tables for selected QoS characteristics are advantageous in such a setting.

At FFI we have an experimental Linux router that supports Multi Topology (MT) routing. The router makes its routing decisions based on static “typical” QoS characteristics of the links that make up the route. The router does not have any knowledge about the traffic load on the route. We want to build an admission control mechanism that use the routes calculated by the MT router and do explicit load measurements on the provided route before traffic is admitted to the network. One option is to use the techniques described in 1 for load measurements. This should improve the admission control decision for the system.

The student work can for instance include a state of the art study of measurement techniques to identify traffic load on a path, implementation of “the best” available technique on the Linux based MT router and a performance analysis of the system in a test bed at FFI, Kjeller.

In this activity we can offer a short project topic, a short/long master topic or a combination of both. If this sounds interesting, don’t hesitate to contact us for more information.

The work must be done in close cooperation with the network communications group at FFI, Kjeller. Since the student’s work requires repeated access to our test bed at FFI, the student will need a security clearance.

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