Modeling Availability in Tactical Mobile Ad hoc Networks for Situational Awareness

Simon Hunke, Gabriel Klein, Marko Jahnke

Fraunhofer Institute for Communication, Information Processing and Ergonomics FKIE
Neuenahrer Straße 20, 53343 Wachtberg, Germany
`firstname.lastname@fkie.fraunhofer.de`

Abstract: Mobile ad hoc networks (MANETs) provide a powerful technology to create self-organizing networks of mobile computing devices without existing infrastructures. In tactical deployment scenarios (e.g., disaster area rescue missions or military deployment), significant protection demands arise. To defend MANETs against internal and external attacks on the availability of its internal resources, it is necessary to achieve situational awareness (SA).

This contribution describes an extended modeling approach that represents the key properties of the observed environment in data structures. These enable the interpretation and prediction of the environment under different circumstances (e.g., under attack), using quantifiable security metrics. The enhancements described and discussed here cover shortcomings of earlier work, especially potential modeling inconsistencies in terms of objectively measurable availability values (e.g., on the physical layer).