Abstract

To explore the behavior of new algorithms or applications for mobile wireless ad-hoc networks, dedicated simulation systems are widely used. Since such simulation systems can only approximate the situation existing in real networks, significant efforts have to be spent to adapt algorithms or applications running in a simulation environment to run in a real network environment.

In this paper, we present an approach to provide an emulation environment for mobile ad-hoc networks that is as similar as possible to the real networking conditions and in fact can be interfaced to real-world devices. The proposed system is based on multiple Linux instances running on top of a microkernel. A special multiplexer component provides interconnection between the Linux instances and optionally a link to physical networks. By controlling network connections between the different instances, an emulation of node movement as well as error conditions in the network is possible. From the experiment, topology of wireless ad-hoc network will be change based on scenario.

Keyword: wireless ad-hoc networks, network emulation, microkernel