Karlsruher Institut für Technologie

KOLLOQUIUM

Informatik-Sonderkolloquium

Efficient Communication in Ad-Hoc Mobile Networks

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An ad-hoc mobile network is a collection of mobile hosts with wireless network interfaces forming a temporary network without the aid of any established infrastructure or centralized administration. In an ad-hoc network two hosts that want to communicate may not be within the wireless transmission range of each other, but could communicate if other hosts between them are also participating in the ad-hoc network and are willing to forward packets for them.

The most common way to establish communication is to form paths of intermediate nodes (hosts), where it is assumed that there is a link between two nodes if the corresponding hosts lie within one another's transmission radius and hence can directly communicate with each other. In wide area ad-hoc networks, however, a sufficiently long communication path is difficult to establish and/or maintain. Single link failures, happening when a small number of users that were part of the communication path move in a way such that they are no longer within the transmission range of each other, make the path invalid.

In this lecture, we shall investigate a different approach to establish basic communication in ad-hoc mobile networks. The main idea is to take advantage of the mobile hosts natural movement by exchanging information whenever mobile hosts meet incidentally. In particular, two protocols will be presented that are based on the semi-compulsory approach, according to which a small part of the mobile users that moves in a predetermined way is used as an intermediate pool for receiving and delivering messages. The practical assessment of the protocols will be also discussed.

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Mittwoch, 16.05.12, 14:00 Uhr

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