Abstract

IEEE 802.11b networks are becoming more ubiquitous. While roaming through access points, a mobile node is often required to perform a link layer handover. This mechanism causes connection losses and breaks in time-sensitive communication, especially if a network layer handover follows the link layer handover. In this paper, we propose to reduce handoff latency for IEEE 802.11 wireless networks with Neighbor Graphs (NG) pre-scanning mechanisms and using a GPS based server which predetermines the next probable AP using three formulated
geometry based mathematical techniques. IEEE 802.11 uses 11 channels of which the channels 1, 6 and 11 do not mutually overlap. As they are non-overlapping, the channels are expected to have a lower carrier-to-interference ratio (CI) compared to the other channels present under the same base station, which increases the channel's availability during handoff due to high signal to noise ratio (SNR). When handoff criterion have been met, we design an algorithm to first determine the Access Point (AP), by the geometrical models, under whose coverage area the Mobile node (MN) would enter, and then scanning the channels 1, 6 and 11, if present under the next Access Point (AP), to reduce the scanning delay. We also introduce pre-authentication mechanism, which will effectively reduce the message processing delay.

Reference

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Geometrical Mathematical Models and Carrier to Interference Ratio based Handoff Algorithm for Reduction of Handoff Latency in Wireless Networks

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Index Terms

Computer Science Wireless Communication

Key words
Carrier- to-Interference (CI) Ratio Global
Position Systems (GPS)

Area Comparison Method

Angular Displacement Method