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.

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- Eun-Dae Kim, Duck-Ki Ahn, Su-Yong Kim, and Sung-Joon Cho”Improvement of Pre-authentication with Neighbor Graph for Fast Handoff in WLANs”

**Index Terms**

Computer Science  Wireless Communication

**Key words**

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

Area Comparison Method

Angular Displacement Method