



TECHNOLOGY

Self-Optimization, Dynamic Positioning, and Mobility Management in Wireless Networks

OVERVIEW

In a dynamic wireless network based on Internet protocols, backbone or base station platforms can move autonomously and be managed in order to assure the coverage and connectivity between mobile end user devices. Such networks use a two-tiered architecture, where a set of wireless end user devices are connected to a directional wireless backbone (DWB) network of higher capability nodes or base stations that aggregate and transport network traffic.

In wireless networks, uncontrolled network dynamics such as terminal node mobility and atmospheric attenuation can cause link degradation. Researchers at the University of Maryland have developed novel models and methods for controlling and positioning DWB platforms in order to guarantee their coverage of mobile end user devices, while ensuring that the backbone or the backhaul bandwidth and quality of service (QoS) are maximized. In addition to controlling present backbone mobility, methods and models are used to predict anomalies that will require future movement. These techniques allow network re-configuration before failure. Upon detection of a real or potential link degradation event, an adaptive control methodology considers the release, retention, or reconfiguration of communication links based on their role in the network architecture.

Advantages:

- Optimal and QoS-based reconfiguration of backbone typology
- Control and prediction of positioning of backbone platforms
- Use of control strategies for determining positioning that are analogous to those used in nature

Applications:

- Mobile wireless communications
- Control of mobile ad hoc DWB platforms
- Detection and prevention of future anomalies and degradation
- QoS assurance

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Available for exclusive or non-exclusive license

CATEGORIES

- Information Technology

EXTERNAL RESOURCES

- [US Patent 8,831,524](#)

IS-2010-106