

CALL FOR PAPERS

IEEE Wireless Communications Magazine

Special Issue on

Toward Seamless Internetworking of Wireless LAN and Cellular Networks

Wireless LAN is a very cost-effective alternative to cellular access networks in hot spot areas, such as business centers, supermarkets and airports, as their equipment cost is relatively low and they operate in the unlicensed industrial, scientific and medical (ISM) band. Data rate provided by the Wireless LAN standards is far above the targeted 144 kbps of GPRS and 384 Kbps – 2 Mbps of the UMTS cellular systems, making the Wireless LAN an important and attractive, yet easy to implement adds on service to the usual 3G cellular systems. As a result, most of cellular system providers have now considered the integration of the Wireless LAN with their wide area cellular network in order to cope with the ever-increasing demand from high-speed data applications at least in hot spot and indoor environments. At the same time, such integration will ultimately reduce the cost and provide service affordability to mobile data users.

Internetworking of the Wireless LAN (as an extension of the wired LAN) with the mobile cellular technology however would not be a straightforward task. As a first step, an architecture that can provide adaptation of different elements implemented in the two systems must be designed. ETSI (the European Telecommunications Standards Institute) has already specified two generic approaches toward the integration of the Wireless LAN and GPRS/UMTS systems, known as loose coupling and tight coupling. Although the two approaches are promising, there is no final decision on whether the future integrated network would use either of those approaches or a completely different one. The first step will be followed by many other steps such as mobility management, data security, user authentication and authorization, traffic and congestion control, quality of service guarantee, real-time and constant/variable bit-rate support for voice and video. Without all those steps, a seamless internetworking between the two systems would not be feasible.

This special issue of the Magazine is devoted to the research activities within the industry and academia toward the integration of the Wireless LAN and cellular 3G systems. Articles for this special issue will be solicited through an open call-for-papers and invitation to the experts in the field from industry and academia. Topics of interest include but not limited to:

- Architecture design alternatives for an integrated Wireless LAN-Cellular system
- Design of internetworking function units and their performance analysis
- Smooth handoff techniques between Wireless LAN and cellular systems
- Quality of service establishment in heterogeneous networks
- Network selection criteria and selection techniques in heterogeneous networks
- Traffic control techniques and traffic monitoring in heterogeneous networks
- IP address selection techniques in LAN/Cellular integrated environment
- Macro-mobility techniques for seamless internetworking
- Pricing and subscription database techniques in integrated Wireless LAN-Cellular systems
- Security techniques in heterogeneous networks
- Location management techniques
- Convergence of link layer functionality in Wireless LAN and Cellular systems
- Standardization activities as well as proprietary solutions for the Wireless LAN-Cellular integration

Submission

Articles should be tutorial in nature and should be written in a style comprehensible to readers outside the specialty of the article. All submissions will be reviewed based on technical merit and relevance. Mathematical equations should not be used (in justified cases up to three simple equations could be allowed, provided the consent of the Guest Editor). Articles should have no more than 4,500 words, 6 tables/figures, or 15 references. Guidelines for prospective authors can be found on-line at http://www.comsoc.org/pubs/pcm/pub_guidelines.html. Please send PDF (preferred), Microsoft Word, or PostScript formatted papers to Abbas Jamalipour (a.jamalipour@ieee.org) no later than 15 June 2004. Accepted papers will also be included in Wireless Communications Interactive (WCI), the online version of Wireless Communications Magazine.

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