

GUEST EDITORIAL ON PERSONAL COMMUNICATIONS

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Personal communications systems (PCSs) provide communication services anywhere, anytime, with anybody and in any form. To implement personal communications concepts, extremely sophisticated systems which integrate many diverse technologies are required. This issue contains an extra section focussing on various aspects of PCSs.

In the first article, Charles Perkins provides an overview of Mobile IP. Mobile IP has been designed within the IETF to support mobility management for mobile computers so that they can connect to the Internet and maintain communications as they move from place to place. This article describes three major component protocols of Mobile IP (Agent Advertisement, Registration and Tunnelling) and route optimization procedures, and a future research road-map for Mobile IP is outlined.

In the second article, Kazem Sohraby investigates traffic behaviour in circular and linear cellular arrays. A model for fixed velocity mobiles is introduced. It is shown that the cellular network traffic is independent of the number of cells in the circular array case and that, compared with non-mobility in both linear and circular arrays, mobility factors such as cell size, call holding time and velocity of mobiles have considerable impact on probabilities of call blocking.

In the third article, Paramvir Bahl, Imrich Chlamtac and Andras Farago address the issues that arise from supporting integrated multirate multimedia traffic in a poor-bandwidth wireless environment. A novel bandwidth allocation strategy is introduced and discussed that can partition the available bandwidth amongst the different traffic classes in a manner that ensures guaranteed quality of service for digital video while minimizing the maximum blocking probability for voice and data connections. This algorithm, which is built on non-trivial mathematical

results, is robust, easy to implement and has a geometric rate of convergence which ensures that the partitioning points are found quickly. These properties make it well suited for practical implementation, even for cases in which changes in the aggregate traffic loads cause bandwidth allocations to be recomputed frequently.

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Author's biography:

Yi-Bing Lin received his BSEE degree from National Cheng Kung University in 1983 and his PhD degree in computer science from the University of Washington in 1990. From 1990 to 1995 he was with the Applied Research Area at Bell Communications Research (Bellcore), Morristown, NJ. In 1995 he was appointed Professor at the Department of Computer Science and Information Engineering (CSIE), National Chiao Tung University (NCTU). In 1996 he was appointed Deputy Director of the Microelectronics and Information Systems Research Center, NCTU and in 1997 he became the Chair of CSIE/NCTU. His current research interests include the design and analysis of personal communications services networks, mobile computing, distributed simulation and performance modelling.

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