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Advanced wireless networks : 4G technologies

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Abstrak

The major expectation from the fourth generation (4G) of wireless communication networks is to be able to handle much higher data rates, which will be in the range of 1Gb in the WLAN environment and 100 Mb in cellular networks. A user, with a large range of mobility, will access the network and will be able to seamlessly reconnect to different networks, even within the same session. The spectra allocation is expected to be more flexible, and even flexible spectra sharing among the different subnetworks is anticipated. In such a ?composite radio environment? (CRE), there will be a need for more adaptive and reconfigurable solutions on all layers in the network. For this reason the first part of the book deals with adaptive link, MAC, network and TCP layers including a chapter on crosslayer optimization. This is followed by chapters on mobility management and adaptive radio resource management. The composite radio environment will include presence of WLAN, cellular mobile networks, digital video broadcasting, satellite, mobile ad hoc and sensor networks. Two additional chapters on ad hoc and sensor networks should help the reader understand the main problems and available solutions in these fields. The above chapters are followed by a chapter on security, which is a very important segment of wireless networks. Within the more advanced solutions, the chapter on active networks covers topics like programmable networks, reference models, evolution to 4G wireless networks, 4G mobile network architecture, cognitive packet networks, the random neural networks based algorithms, game theory models in cognitive radio networks, cognitive radio networks as a game and biologically inspired networks, including bionet architecture. Among other topics, the chapter on networks management includes self-organization in 4G networks, mobile agent-based network management, mobile agent platform, mobile agents in multioperator networks, integration of routing algorithm and mobile agents and ad hoc network management.