Performance Issues in Wireless Mesh Networks

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Abstract

Mesh networks have become increasingly important because they can be easily implemented without much infrastructure and can support adequate bandwidth with a flexible multi-hop wireless communication among their routers serving the clients. This talk provides an overview of the design of Wireless Mesh Networks (WMNs) and identifies various characteristics. Problems such as route determination, channel allocation, load-balancing, etc. will be described to have a clear understanding of the mesh technology. Issues such as selfishness and its impact on the performance will be discussed. Useful research directions will also be clearly identified. Future widespread deployment of the WMN seems quite promising, even though security and scalability questions still remain real bottlenecks.

Dharma P. Agrawal is the Professor of Computer Science and the founding director for the Center for Distributed and Mobile Computing in the Department of Computer Science. He has been a faculty member at the ECE Dept., Carnegie Mellon University (on sabbatical leave), N.C. State University, Raleigh and the Wayne State University. His current research interests include resource allocation in wireless mesh networks, query processing and secured communication in sensor networks, environmental monitoring using sensor networks, and effective traffic handling in integrated wireless networks. He has published several books and over 500 papers. His recent co-authored textbook on Introduction to Wireless and Mobile Systems published by Thomson, has been adopted through the world and has been reprinted in both China and India as well as translated in both Korean and Chinese languages. His second co-authored book Ad hoc and Sensor Networks- Theory and Applications has been published by World Scientific in Spring 2006. He is an editor for the Journal of Parallel and Distributed Systems, founding Editorial Board Member, International Journal on Distributed Sensor Networks, International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC), International Journal of Ad Hoc & Sensor Wireless Networks and the Journal of Information Assurance and Security (JIAS). He has served as an editor of the IEEE Computer magazine, and the IEEE Transactions on Computers and the International Journal of High Speed Computing. He has been the Program Chair and General Chair for numerous international conferences and meetings. He has received numerous certificates from the IEEE Computer Society. He was awarded a Third Millennium Medal, by the IEEE for his outstanding contributions. He has also delivered keynote speech for six international conferences. He has been named as an ISI Highly Cited Researcher and is a Fellow of the IEEE, the ACM, the AAAS and the World Innovation Foundation.