

Security and Trust in Mobile Ad Hoc Networks

Mohsen Guizani, Ph.D.

Professor and Chair, Computer Science Department

Western Michigan University, Michigan, USA

Email: mguizani@cs.wmich.edu

Website: <http://www.cs.wmich.edu/~mguizani/>

Many routing protocols have been proposed by researchers for possible practical implementation of a Mobile Ad-Hoc Network (MANET) in military, government and commercial environments. Examples of such protocols include: Ad Hoc on demand Distance Vector routing (AODV), Dynamic Source Routing (DSR), Optimized Link State Routing (OLSR) and Temporally Ordered Routing Algorithm (TORA), and many others. We also have reactive and proactive routing protocols. In most of these routing protocols, security is built on top of the protocol. In many cases, this turn out not to be the best approach in terms of being fully secured. Therefore, we propose a new security feature that will be designed from the ground up considering the routing concepts with the security and trust integrated. We call this new protocol model “Trust-Aware Routing Protocol (TARP).” TARP focuses more on the trusted availability and quality of trust as important factors in securing Ad Hoc networks.

In this talk, we review the current Ad-Hoc routing protocols and investigate their security features. Then, we discuss the details of the new proposed protocol, TARP, and show how we believe that it will resolve some the current security problems that Ad-Hoc networks are facing today.

Bio:

Mohsen Guizani is currently a Full Professor and the Chair of the Computer Science Department at Western Michigan University. He served as the Chair of the Computer Science Department at the University of West Florida from 1999 to 2003. He was an Associate Professor of Electrical and Computer Engineering and the director of graduate studies at the University of Missouri-Columbia from 1997 to 1999. Prior to joining the University of Missouri, he was a Research Fellow at the University of Colorado-Boulder. From 1989 to 1996, he held academic positions at the Computer Engineering Department at the University of Petroleum and Minerals, Dhahran, Saudi Arabia. He was also a Visiting Professor in the Electrical and Computer Engineering Department at Syracuse University, Syracuse, New York during academic year 1988-1989. He received his B.S. (with distinction) and M.S. degrees in Electrical Engineering; M.S. and Ph.D. degrees in Computer Engineering in 1984, 1986, 1987, and 1990, respectively, all from Syracuse University, Syracuse, New York.

His research interests include Wireless Communications and Computing, Computer Network Security, Design and Analysis of Computer Systems, and Optical Networking. He currently serves on the editorial boards of many national and international journals, such as the IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular

Technology, IEEE Communications Magazine, the Journal of Parallel and Distributed Systems and Networks, and the International Journal of Computer Research. He served as a guest editor in the IEEE Communication Magazine, IEEE Journal on Selected Areas in Communications, IEEE Network Magazine, Journal of Communications and Networks, The Simulation Transaction, International Journal of Computer Systems and Networks, International Journal of Communication Systems, International Journal of Computing Research, and Journal of Cluster Computing. Dr. Guizani is the founder and Editor-In-Chief of “Wireless Communications and Mobile Computing,” Journal published by John Wiley (<http://www.interscience.wiley.com/jpages/1530-8669/>). He is also the Founder and General Chair of the IEEE International Conference of Wireless Networks, Communications, and Mobile Computing (IEEE WirelessCom). He is the author of four books: *Designing ATM Switching Networks*, by McGraw-Hill—1999 (<http://www.pbg.mcgraw-hill.com/computing/authors/guizani.html>), *Wireless Systems and Mobile Computing*, by Nova Science Publishers—2001, *Optical Networking and Computing for Multimedia Systems*, by Marcel Dekker, June 2002, and *Wireless Communications Systems and Networks*, by Kluwer, June 2004. He served as a Keynote Speaker for many international conferences as well as presented a number of Tutorials and Workshops. He served as the General Chair for the *Parallel and Distributed Computer Systems* (PDCS 2002), *IEEE Vehicular Technology Conference 2003* (VTC'03), *PDCS 2003*, *IEEE WirelessCom 2005*, *ACS/IEEE AICCSA 2006*, and *IWCMC 2006*. He also served as the program and Symposia chair for many conferences and Symposia in IEEE Globecom and IEEE ICC. He has more than 160 publications in refereed journals and conferences in the areas of High-Speed networking, Wireless networking and Communications, Optical Networking and Network Security.

Dr. Guizani is the Chair of the IEEE Communications Society Technical Committee on Transmissions, Access, and Optical Systems (IEEE TAOS), the Secretary for the IEEE Communications Society of Personal Communications (IEEE TCPC), and a member of the Computer Network Security Technical Committee. Dr. Guizani is designated by the IEEE Computer Society as a Distinguished National Speaker from January 2003 to December 2005. He is also ABET Accreditation Evaluator for Computer Science and Information Technology Programs.

Dr. Guizani received both the Best Teaching Award and the Excellence in Research Award from the University of Missouri-Columbia in 1999 (a college wide competition). He won the best Research Award from KFUPM in 1995 (a university wide competition). He was selected as the Best Teaching Assistant for two consecutive years at Syracuse University, 1988 and 1989.

Dr. Guizani is a senior member of IEEE, member of IEEE Communication Society, IEEE Computer Society, ASEE, ACM, OSA, SCS, and Tau Beta Pi.