

Title of talk: Satellites as Internet Nodes: Challenges and Solutions

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Abstract: Data communications between Earth and spacecrafts, such as satellites, have traditionally been carried out through dedicated links. Shared links using Internet Protocol-based communication offers a number of advantages over dedicated links. The movement of spacecrafts however gives rise to mobility management issues.

This talk will discuss various mobility management solutions for extending the Internet connection to spacecrafts. The talk will provide an overview of the network layer based solution being developed by the Internet Engineering Task Force and compare with the transport layer based solution that have been developed at University of Oklahoma in conjunction with the National Aeronautics and Space Administration. Network in motion is an extension of the host mobility protocols for managing the mobility of networks which are in motion, such as those in airplanes and trains. The application of networks in motion will be illustrated for both terrestrial and space environment along with security issues related to mobility management schemes.

Bio: Mohammed Atiquzzaman (Senior Member, IEEE) obtained his M.S. and Ph.D. in Electrical Engineering and Electronics from the University of Manchester (UK) in 1984 and 1987, respectively. He currently holds the Edith J Kinney Gaylord Presidential professorship in the School of Computer Science at the University of Oklahoma.

Dr. Atiquzzaman is the Editor-in-Chief of Journal of Networks and Computer Applications, the founding Editor-in-Chief of Vehicular Communications, and serves/served on the editorial boards of many journals including IEEE Communications Magazine, Real Time Imaging Journal, International Journal of Communication Networks and Distributed Systems and Journal of Sensor Networks and International Journal of Communication Systems. He co-chaired the IEEE High Performance Switching and Routing Symposium (2003, 2011), IEEE Globecom and ICC (2014, 2012, 2010, 2009, 2007, 2006), IEEE VTC (2013) and the SPIE Quality of Service over Next Generation Data Networks conferences (2001, 2002, 2003). He was the panels co-chair of INFOCOM'05, and is/has been in the program committee of many conferences such as INFOCOM, Globecom, ICCCN, ICCIT, Local Computer Networks, and serves on the review panels at the National Science Foundation. He is the current Chair of IEEE Communication Society Technical Committee on Communications Switching and Routing.

Dr. Atiquzzaman received the 2018 Satellite and Space Communications Technical Recognition Award (IEEE) for "valuable contributions to the Satellite and Space Communications scientific community", the 2017 Distinguished Technical Achievement Award (IEEE), for "outstanding technical contributions and services in the area of communications switching and routing". He was honored with the IEEE Communication Society's Fred W. Ellersick Prize, and NASA Group Achievement Award for "outstanding work to further NASA Glenn Research Center's effort in the area of Advanced Communications/Air Traffic Management's Fiber Optic Signal Distribution for Aeronautical Communications" project. He is the co-author of the book "Performance of TCP/IP over ATM networks" and has over 300 refereed publications, available at www.cs.ou.edu/~atiq.

His current research interests are in areas of transport protocols, wireless and mobile networks, ad hoc networks, satellite networks, power-aware networking, and optical communications. His research has been funded by National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), and U.S. Air Force, Cisco and Honeywell.