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IP multicast communication in the Internet of things

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Internet of things is a new challenging networking concept where billion of smart IP enabled devices are able to auto-configure themselves and connect autonomously to the Internet. Different standards, operating systems and protocols have been designed for low-power and low-processing devices. Tiny wireless sensor objects implementing these standards are designed to operate in very large-scale and low-power demanding industrial applications including smart transport, e-Health, oil and gas surveillance and environment monitoring. These sensor nodes are sometimes required to cover geographically widespread indoor and outdoor spaces and to operate as one single group to achieve a collaborative sensing or monitoring task. Some of these devices such as mobile robots require moving from one sensing field to another. To perform this type of communication, IP multicast is the appropriate technological method to save network bandwidth and processing resources of critical wireless sensor devices. However, the majority of proposed standards by the Internet Engineering Task Force (IETF) and IEEE were not designed with group communication in mind. Therefore, there is an urgent need to revisit these standards to embed multicast and group communication capabilities at the different communication layers to facilitate multimedia content delivery over Low-Power and Lossy Networks and to integrate wireless sensors with next generation networks. This research talk will highlight the latest research and industrial efforts and trends to deploy IP multicast in IPv6 wireless sensor networks and discuss the advantages and weakness of each approach.

Biography

Imed Romdhani is an Associate Professor in Computer Networks at Edinburgh Napier University, UK. He has completed his PhD from the University of Technology of Compiegne in France and worked as a network R&D engineer with Motorola Labs in Paris. He is an active member of the Internet Engineering Task Force (IETF) where he reviewed and contributed to write many standards and Internet Drafts. He authored a couple of patents in the networking field and has published more than 30 papers in reputed journals and has been serving as a program committee member of reputed IEEE networking conferences.

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