The Evolution of Mobility and Wireless Technologies in the Age of the Internet of Things

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ABSTRACT

This keynote presentation will focus on the challenges and opportunities imposed on mobility and wireless communications technologies by the emerging and explosive needs of the future Internet of Things. As traditional (wireless) networking meets the "real world", with its highly mobile requirements, its noisy and lossy environments, its need to optimize communications across multiple, non-homogeneous wireless technologies, with often intermittent connectivity, its requirements for more deterministic exchanges, the urgent need of innovation and accelerated research into a number of relevant and exiting domains become apparent.

We will describe the ICT Infrastructure developments needed to support these new requirements, and identify broad open mobility and wireless research topics, which may help catalyze innovation affecting our industry.

In particular, among other topics, we will deal with the issue of IP mobility, and will discuss technologies responding to these requirements (LISP among them). We will then consider the need to support and manage non-homogeneous, multi-homed, highly lossy wireless connectivity, and will highlight the potential roles of Distributed Computing and of Network Coding in this domain. Finally, we will detail the deterministic networking requirements arising in a number of Internet of Things verticals, and highlight progress towards the definition and standardization of techniques enabling more predictable exchanges even in wireless networks.

Categories and Subject Descriptors

C.2.4 [Distributed Computing]: Cloud Computing, Ubiquitous Computing

H.4 [Information Systems Applications]: Miscellaneous

Keywords

Distributed Computing, Network Coding, Deterministic Networking, LISP, Multi-homing, Internet of Things.

BIOGRAPHY

Flavio Bonomi is a Cisco Fellow, and is heading the Advanced Architecture and Research Organization at Cisco Systems, in San Jose', California.

He is co-leading (with JP Vasseur) the vision and technology direction for Cisco's Internet of Things initiative. This broad, Cisco-wide initiative encompasses major verticals, including Energy, Connected Vehicle and Transportation, Connected Cities. In this role, with the support of his team, he is shaping a number of Research and innovation efforts relating to mobility, security, communications acceleration, distributed computing and data management.

Before joining Cisco in 1999, Flavio Bonomi was at AT&T Bell Labs, between 1985 and 1995, and then was Principal Architect at two Silicon Valley startups, ZeitNet and Stratum One.

Flavio Bonomi received a PhD Electrical Engineering in 1985, and a Master or Electrical Engineering in 1981 from Cornell University in Ithaca, New York.

He received his Electrical Engineering Degree from Pavia University, in Italy.

ACKNOWLEDGMENTS

I sincerely acknowledge the entire Cisco Advanced Architecture and Research Team for their precious contributions to the work presented here.

MobiCom'13, September 30–October 4, 2013, Miami, FL, USA.
ACM 978-1-4503-1999-7/13/09.
http://dx.doi.org/10.1145/2500423.2500455