IPv6 for Low-Power Wireless: Breakthrough Ahead?

A. Dunkels, Founder, Networked Embedded Systems group, SICS, Kista, Sweden

Summary

Being able to give active IPv6 connectivity to otherwise inanimate objects gives rise to an unparalleled amount of applications and innovation in such diverse areas such as city planning, smart toys, road traffic monitoring, industrial automation, critical infrastructure monitoring, and the smart grid. But providing IPv6 communication to low-power wireless devices has significant technical challenges. The devices themselves are severely resource-constrained in terms of energy, memory, and communication bandwidth. How do we provide IPv6 networking within such limited resources? The networks of these devices are void of visibility, particularly in terms of their power consumption. How do we know what is going on inside our low-power wireless IPv6 networks? This talk gives a glimpse of the opportunities and the technical challenges when every object is given its own IPv6 address.