

Séminaire ICI : Frédéric Giroire

21 Novembre 2018, 11:00

Titre du séminaire et orateur

Optimization of Network Infrastructures - A little bit of green in networks and other problems of placement and management of resources.

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Date et lieu

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ENSEA, salle 384

Abstract

I present a set of solutions to optimize network infrastructures. Pushed by the new sensitivity of the society, politics, and companies to energy costs and global warming, I investigated the question of how to build green networks. I first studied some practical scenarios to answer the question: how much energy could be saved for Internet Service Providers by putting into practice energy efficient protocols ? It led me to study fundamental problems of graph theory. At the core of these energy efficient methods, there is a dynamic adaptation to the changes of demands, which is impossible to do in legacy networks which are mostly manually operated. The emergence of two new paradigms, software defined networking (SDN) and network function virtualization (NFV), leads to a finer control of networks and thus bears the promise to put energy efficient solutions into practice. I thus studied how to use SDN to implement dynamic routing. My approach has been to use theoretical tools to solve problems raised by the introduction of new technologies or new applications. My tools come mainly from combinatorics and in particular from graph theory, algorithmics, optimization and probabilities. When I was able to propose new methods of resolution, I then tried to evaluate their practical impact by numerical evaluation, simulation or experimentation with realistic scenarios.

<http://www-sop.inria.fr/members/Frederic.Giroire/>