

Non-convexity issues in optimal resource allocation in wireline and wireless networks

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ABSTRACT

In this talk we will discuss the problem of implementing a distributed scheme for allocating bandwidth and power for optimizing total system utility in wireline and wireless networks.

In the context of wireless networks and when there are QoS requirements in the wireline case, the resulting utilities turn out to be nonconvex functions of the quantities of interest (power for wireless and bandwidth in the case of wireline). Yet, the literature only deals with the convex case. The non-convexity results in the failure of the Karush- Kuhn-Tucker conditions to identify the necessary conditions as well as non-differentiability of the dual. This has important implications in the design of distributed algorithms.

In the talk I will discuss the consequences of non-convexity in designing distributed schemes. The algorithms depend on the degree of co-ordination that is possible and thus the implementations will differ for the wireless and wireline case.

Joint work with Jang-Won Lee and Ness Shroff of Purdue University

Extended Abstract for "NeXtworking'03" First COST-IST(EU) - NSF(USA) Workshop on Exchanges & Trends in Networking, June 23-25, 2003, Chania, Crete, Greece