Vector network equilibrium problems with elastic demands

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Abstract

We consider vector models for complex systems with spatially distributed elements which arise in communication and transportation networks. In order to describe the flow distribution within such a network, we utilize the equilibrium approach, which extends the shortest path one. Being based on this approach, we investigate several networking control problems, with taking into account many factors. As a result, general vector equilibrium problems models with complex behavior of elements are suggested. In particular, they involve elastic demand functions. Due to the presence of many factors, we utilize multicriteria models with respect to different preference relations. The corresponding problems admit efficient solution methods within optimization and equilibrium frameworks. © 2011 Springer Science+Business Media, LLC.

Keywords

Elastic demands, Flow distribution, Network equilibrium, Preference relations, Vector optimization