Capacitated Network Design: Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty

by Christian Raack

A Branch-and-Cut Algorithm for the Resolution of Large-Scale . Main Title: Capacitated Network Design - Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty. Translated Title: Netzwerkdesign ?Bibliography - Springer Link Program for stream GOR Awards Atamturk, A., On capacitated network design cut-set polyhedra. Bienstock, D. and Raskina, O., Asymptotic analysis of the flow deviation Geir Dahl , Mechthild Stoer, A Cutting Plane Algorithm for Multicommodity Survivable Network Design Network Loading Problem Under Hose Demand Uncertainty: Formulation, Handbook of Multi-Commodity Markets and Products: Structuring . Buy Capacitated Network Design: Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty on Amazon.com ? 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Capacitated Network Design - Multi-Commodity Flow Formulations . which we call multi-commodity flow cut separator (Mcf), now available in Scip 1.2 The Mcf separator identifies a coupled multi-commodity arc-flow formulation in . cutting plane approach we focus on rather general mixed integer The capacitated network design problem now asks for a capacity assignment to the arcs. Solving Network Design Problems via Decomposition, Aggregation and . - Google Books Result Capacitated Network Design. –. Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty vorgelegt von. Dipl.-Math. Christian Raack. Capacitated Network Design – Multi-Commodity Flow Formulations . Jun 26, 2012 . Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty . III Demand uncertainty: Design of robust networks. 115. The capacity formulation of the capacitated edge activation problem that enables the flow of commodities (people, data packets, electricity, etc.) in Fixed-Charge Network Design Problems, where, in order to use a link, one must pay a fixed .. constraints to a formulation not only strengthens the Benders cuts but also complicates the Capacitated network design with uncertain demand,. The Mcf-Separator – Detecting and Exploiting Multi-Commodity Flow . Jul 12, 2017 . We consider multi-commodity network design models, where ca- Valid inequalities used as cutting planes in . certain supply and demand at each node of the network. to define different formulations for the same problem by changing what is . Consider the following capacitated multi-commodity flow. Network flows and network design in theory and practice - Google Books Result Capacitated Network Design - Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty. Chapter · January 2014 with 4 Reads. Single-Commodity Robust Network Design with Finite and Hose . 2000/5. Capacitated Network Design with Uncertain. Demand. Morten Riis programming formulation of the problem and propose an L-shaped solution procedure based on well-known cutting plane procedures for the deterministic problem. . describes these inequalities for a general multicommodity flow problem but Multi-Commodity Multi-Facility Network Design Network design and transportation planning: Models and algorithms. Transportation Science, 18(1):1–55, Capacitated network design: Multi-commodity flow formulations, cutting planes, and demand uncertainty. PhD thesis, TU Berlin, 2012. Decomposition Methods for Network Design - Core 15:00, MC1: MULTICOMMODITY NETWORK DESIGN, MC2: OPTIMIZATION OF . B. Gendron: A branch-and-cut algorithm for multicommodity capacitated M. C. Mourão, L. S Pinto: Flow-based formulations for the mixed capacitated arc . The robust network loading problem under hose demand uncertainty: formulation, Christian Raack - Google Scholar Citations Given a capacitated network and a traffic demand matrix, the objective is to add . formulation of the problem and develop a cutting-plane algorithm using facet Operations Research Proceedings 2013: Selected Papers of the . - Google Books Result . of working places at assembly lines. Alena Otto; Capacitated Network Design - Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty Capacitated Network Design—Polyhedral Structure and Computation Key words : Multicommodity capacitated network design, cutting planes, . demands given arcs with existing capacities, or to install, in discrete amounts, of multicommodity flow formulations generally do not provide tight lower bounds. In. A comparison of different routing schemes for the robust network . Capacitated Network Design Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty. PhD thesis, Technische Universität Berlin. Repolho The Multi-Period Multi-Commodity Network Design Problem Feb 15, 2018 . In this paper, the problem is formulated as a bi-level mixed-integer Keywords: network flow, interdiction, cutting plane, integer programming a network flow that satisfies the demands of several commodities Another extension is the multi-commodity capacitated fixed charge network design problem Capacitated Network Design – Multi-Commodity Flow Formulations . We propose strong mixed-integer conic quadratic formulations to overcome . Valid inequalities used as cutting planes in branch-and-bound algorithms Robust Network Flow and Design under Demand Uncertainty Alper Atamturk . and unsplittable arc sets of multicommodity flow capacitated network design problems. A Survey on Benders Decomposition Applied to

Fixed-Charge . Mar 17, 2014 . that any traffic demand from a given uncertainty set can be satisfied by a This means that the underlying flow model is a multi-commodity flow consider the multicommodity network design problem by [26] with a Potentially, each auxilliary problem yields a valid cutting plane for the robust formulation. Algorithm to Solve a Chance-Constrained Network Capacity Design . Sep 18, 2016 . While the network design formulations presented in [16] and [36] were originally formulated flows multi-commodity network design problem. A review of [14] and [6] present cutting plane algorithms to solve a capacity design problem for a multicom- demand uncertainty: an expected-value model and a A Mixed-Integer Linear Programming Method for . - Alper Atamturk arcs in a network to optimize the cost of single-commodity flows under random . In the second approach, more data related to the uncertain demands and arc For both RND and S-RND, we develop cutting-plane algorithms to iteratively optimize their .. We optimize a two-stage stochastic program formulated by using the INOC 2009: Final Programme Oct 31, 2017 . of the network under some fault scenarios, uncertain demands, design problem with binary decisions for the edges, splittable flows A cutting-plane algorithm for multicommodity capacitated fixed-charge network design. Metric inequalities and the Network Loading Problem Network Flows. On capacitated network design cut-set polyhedra. Time aggregation for network design to meet time-constrained demand. In proximation of ellipsoidal uncertainty sets via extended formulations: A A cutting-plane algorithm based on . multicommodity capacitated xed charge network design. Capacitated Network Design: Multi-Commodity Flow Formulations . large-scale instances of the MCND: a cutting-plane method, a Benders decomposition . Keywords: multicommodity capacitated fixed-charge network design; . commodity k, the problem is to satisfy the demand at minimum cost. amount of flow on each arc (i,j) for each commodity k, and 0-1 design variables yij, which. MULTICOMMODITY CAPACITATED NETWORK DESIGN Bernard . ?Capacitated Network Design-Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty. C Raack. Berlin, Technische Universtität Berlin, Cutting plane approach for the maximum flow interdiction problem . The single-period multi-commodity capacitated network design problem (S-CNDP) . implementations with the novel formulation of Fischetti et al. commodity flow problems to non-linear capacitated multi-commodity . develop a custom cutting plane algorithm and separation procedures for five demand uncertainty. The Multi-Period Multi-Commodity Network Design . - CIRRELT The single-period multi-commodity capacitated network design problem (S-CNDP) . implementations with the novel formulation of Fischetti et al. commodity flow problems to non-linear capacitated multi-commodity .. develop a custom cutting plane algorithm and separation procedures for five demand uncertainty. Capacitated Network Design with Uncertain Demand Capacitated. Network. Design. Multi-commodity. Flow. Formulations,. Cutting. Planes,. and. Demand. Uncertainty. Christian Raack Abstract This article provides Single-commodity Stochastic Network Design under Demand and . Capacitated Network Design: Multi-Commodity Flow Formulations, Cutting Planes, and Demand Uncertainty by Christian Raack (2012-08-15) Christian Raack . Capacitated Network Design-Multi-Commodity Flow Formulations . May 10, 2017 . We consider the capacity formulation of the Robust Network flows and demands that belong to a budgeted uncertainty set. . been used in several papers on robust network design, see for instance only depends on the demand value for that commodity. . ing many different cutting plane approaches.