Hub location problems in transportation networks

In this paper we propose a 4-index formulation for the uncapacitated multiple allocation hub location problem tailored for urban transport and liner shipping network design. This formulation is very tight and most of the tractable instances for MIP solvers are optimally solvable at the root node. While the existing state-of-the-art MIP solvers fail to solve even small size instances of problem, our accelerated and efficient primal (Benders) decomposition solves larger ones. In addition, a very efficient greedy heuristic, proven to be capable of obtaining high quality solutions, is proposed. We also introduce fixed cost values for Australian Post (AP) dataset.

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