A Network-Based Model for
Assigning Flights to Gates at Airports

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ABSTRACT

The gate assignment problem is an important operational issue (GAP) faced by airlines at airports. The assignment schedule has implications for efficiencies in passenger transfer, baggage transfer, towing of unassigned aircraft, scheduling of ground logistics such as fueling, aircraft cleaning, and other maintenance functions, and overall passenger satisfaction. This paper presents a model for assigning flights to gates at airports that maximizes the total preference value of the flight-gate assignments subject to a number of constraints. The problem is formulated as a zero-one linear programming model which has a strong underlying acyclic network structure. The efficiency of the model is demonstrated on data obtained from Air Canada for the Halifax International Airport. A problem with 61 flights and 14 gates is solved optimally using CPLEX in 25 seconds of CPU time.