A Topological Design Algorithm for Local Access Loop Networks with mean delay constraint

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ABSTRACT

The DMCLP(Delay constrained Minimal Cost Loop Problem) is one of problems arising in the design of local access networks. The problem consists of finding a set of loops to satisfy the traffic requirements of end user nodes and to minimize the total link cost. This paper presents a heuristic algorithm which consists of two phases for this problem, under the constraints that the number of nodes served by a single loop is limited and network mean delay is within the desired time. The algorithm is derived using the clusters obtained by the existing MCLP(Minimal Cost Loop Problem) algorithms and a trade-off criterion based on the node exchange and node transfer among clusters. The simulation results in that the proposed algorithm in this paper produces better solution than the existing MCLP algorithm modified. In addition, the algorithm has the relatively short running time.