GeoDivRP Routing with Path Jitter Requirement under Regional Challenges

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In this paper, we have extended the GeoDivRP geo-diverse routing protocol to consider jitter requirements when using multiple geographic paths for telecommunication networks under regional challenges. We have formulated bounded-jitter multipath routing using a multi-commodity flow problem and proposed an integer linear programming formulation to solve it. We have implemented the routing protocol in ns-3 to employ the optimized paths provided by the bounded-jitter optimization solution and have demonstrated its effectiveness compared to OSPF in terms of both throughput and overall edge capacity utilization. GeoDivRP guarantees the jitter constraint provided by the upper layer and satisfies the traffic demand imposed by multiple routing commodities in the telecommunication networks.