# A Framework for Improving Routing Configurations using Multi-Objective Optimization Mechanisms – Abstract and References –

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***Abstract*—IP networks are nowadays well established technologies being used to support a myriad of applications and services, thus assuming a crucial role in todays telecommunication systems. Nevertheless, such infrastructures usually require network administrators to perform a wide set of complex planning and management tasks trying to attain adequate network configurations. Many of such management tasks can be mathematically formulated as NP-hard optimization problems, sometimes involving several objective functions. In this context, this work explores and demonstrates the potential of using computational intelligence methods as optimization engines to tackle complex network optimization problems. In particular, Multi-objective Evolutionary Algorithms (MOEAs) are used to attain near-optimal link state routing configurations robust to distinct operational conditions. As result, network administrators will be provided with a set of alternative routing configurations representing distinct tradeoffs between the considered optimization goals.**

**The robustness of the proposed methods is illustrated by presenting several multi-objective optimization examples able to improve the performance and resilience levels of a network infrastructure. Moreover, the devised methods are integrated in a freely available Traffic Engineering optimization framework able to be used by network administrators interested in this particular research field.**

***Index Terms*—Communications Software, Routing, Traffic Engineering, Network Resilience, Evolutionary Algorithms**

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