Dynamic Traffic Engineering for Future IP Networks

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Abstract

Efficient routing algorithms have always been among the core building blocks of any packet switching network. Whereas most routing protocols have primarily been designed for achieving network robustness and fast network convergence in the case of failures, the research interest in the routing of Internet traffic has recently extended towards traffic engineering, i.e., performance optimization of operational networks. Currently, there exists a plethora of competing proposals for traffic engineering, many of which require additional network management efforts, or introduce significant amounts of signaling information into the network. We propose Adaptive Multi-Path routing (AMP) as a simple algorithm for dynamic traffic engineering within individual Internet domains. In contrast to related multipath routing proposals, AMP does not employ a global perspective of the network in each node. It restricts available information to a local scope, which opens the potential of reducing signaling overhead and memory consumption in routers. Having implemented AMP in ns-2, the algorithm is compared to standard routing strategies for two realistic simulation scenarios. The results demonstrate the stability of AMP as well as the significant performance gains achieved.