

Routing Dynamics in Wireless Mesh Networks

Motivation

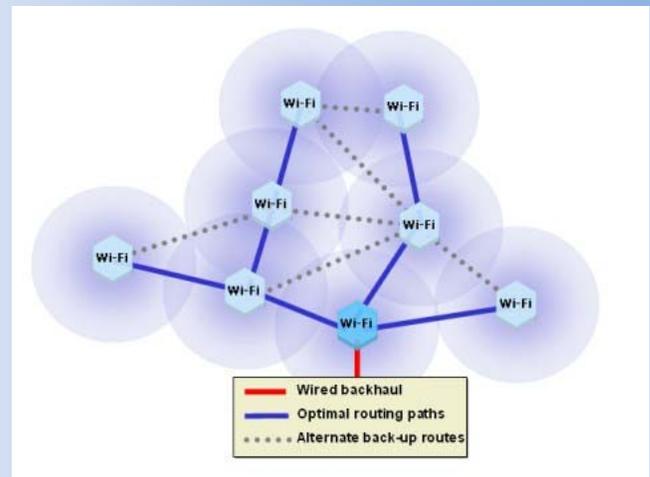
Instability in multihop wireless network connectivity has so far been regarded as a difficult problem that existing routing algorithms try their utmost to avoid. In doing so, they limit packet forwarding only to long term reliable links, and forego a large class of potentially valuable links of intermediate quality that can significantly enhance routing progress in wireless networks. Fine-grain analysis of link qualities reveals that these intermediate links are bursty: rapidly shift between good and bad quality.

Traditional routing protocols emphasize on maintaining a stable routing topology. Therefore, they are unable to make use of the high routing progress offered by these bursty links. An adaptive routing strategy along with fine-grain estimations of link qualities could enable us to make use of these unstable but valuable links.

Challenges

In this thesis your task will be to allow a routing protocol to forward packets over the links that are unstable but often offer higher routing progress than long term stable links. Your task will be to design and develop a Short Term Link Estimator (STLE) for adaptive routing in wireless networks. A thorough evaluation on a WiFi test-bed at our institute will also provide hands-on experience with wireless access points.

This topic will give you not only the opportunity to gain insight into real protocol development, but also hands-on experience with real WiFi test-beds. If you're interested, come over for a coffee or tea and discuss this thesis with us!



Requirments

Knowledge of communications systems and distributed systems as well as good C/C++ background is helpful for this thesis. We offer you a great work atmosphere which is both casual and challenging, motivated advisors, table soccer, and a good coffee machine ☺

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