Title: "Evolution of Network Technologies and its Impact on Traffic Engineering"

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Abstract:

The evolution of communication networks is currently characterized by the convergence of telecommunication networks (ISDN, Mobile Communication Networks of 2G, 2.5G and 3G), and computer communication networks towards an architecture of a network for universal services. This network is likely to consist of 3 major levels:

- physical layer networks, such as WDM optical networks (including optical circuit, burst and packet switching), high-speed LAN/MAN, broadband wireless networks, and diverse network access technologies)

- intermediate universal transport network level, based on IP packet technologies and transport protocols, such as UDP, TCP, RTP, etc.

- virtual network level (overlay network) for application classes, such as voice-over-IP, multimedia, web access, peer-to-peer file sharing, etc.

Specific application scenarios affect the requirements of such a network with respect to throughput, quality of service, availability, reliability and security. In particular, traffic engineering requires advanced methods of multi-layer approaches, e.g. between the optical and electrical transport layers for traffic aggregation and path routing, between layer 1, 2 or 3 handover for mobile users or between the transport layer and overlay networks for peer-to-peer applications which will be addressed in more detail.