

**Quality of Service support for Interdomain Routing**

*Nishant Kumar*, D.Deg, 05, 48 pp.

Department of Computer Science and Engineering

Indian Institute of Technology Bombay, Powai, Mumbai 400 076.

Supervisor(s): Girish P. Saraph, Varsha Apte

Providing end-to-end Quality of Service (QoS) guarantees for interdomain routing remains a challenge for next generation Internet. As various real-time, mission-critical, and bandwidth-sensitive applications are migrating to the IP Networks the need for end-to-end QoS is becoming acute. Large existing base of BGP compliant networks rule out the acceptability of new routing protocol. However, inherent nature and functionality of BGP makes the QoS extensions rather difficult. The thesis presents a novel approach to achieve end-to-end QoS support by proposing a new Alliance Network model, comprising of several ASes from different tiers. It extends the functionality of traditional route reflector to include control and management tasks. The most important aspect of the proposed model is its compatibility with existing BGP infrastructure, and providing evolutionary path for QoS support. The Alliance Network sets-up interdomain paths for premium traffic, requiring specific QoS guarantee, while the traditional BGP traffic continues in a normal fashion. Alliance network takes into consideration the business relationships among ASes and respect the privacy of individual collaborating AS. In total it provides enhanced geographical reach and market penetration for the alliance partners through premium service offerings. OPNET, a comprehensive development tool for modeling of communication networks is used to implement BGP on a designed network topology. BGP parameters are tweaked to engineer the voice traffic and meet the QoS requirements for it.