List of Projects that NetRL is involved
This paper aims to enhance the transport services of Ethernet MANs by utilizing SLA information to control traffic more intelligently, to detect congestion more accurately, and to handle packet losses more adaptively. Ethernet services convert Ethernet from a best effort technology to a service level agreement (SLA) driven carrier-grade technology, extending the simplicity and flexibility of Ethernet beyond the LAN to the MAN/WAN. Although current bandwidth allocation schemes are able to reassign idle capacity and provide QoS at link layer, the end-to-end throughput in the application layer is not optimized. The performance of TCP over SLA driven Ethernet services is not adequate, because the mechanisms of TCP are designed for best effort networks. Because of the stochastic nature of Ethernet networks, a small but non-zero random loss rate is inevitable, which can be tolerated by Ethernet services, but not by TCP. In this paper, a novel SLA-aware transport control scheme is proposed to utilize reserved bandwidth more efficiently using a shifted additive increase multiplicative decrease (AIMD) algorithm, and to detect congestion more accurately using a new decision rule based on hypothesis test. The new congestion control method can keep false-alarm probability under control and therefore it increases throughput significantly. The performance of the proposed scheme is compared with traditional TCP through theoretical analyses and simulations.

Teaching: OPNET has been used for demonstration of concepts in the graduate and undergraduate subjects EPL657, EPL653, EPL420, EPL224, and undergraduate and postgraduate student projects of communication networks.
A number of papers are published in very well respected journals and conferences, with OPNET explicitly mentioned as the simulation tool. Full list of publications, please visit the Publications Section.

Partial list of publications where OPNET is explicitly referred to:


- A. Pitsillides, C. Christoforou, MBMS Handover Control: A New Approach for Efficient Handover in MBMS Enabled 3G Cellular Networks, Accepted for publication in Computer Networks Journal (COMNET), (subject to revision).

Christophoros Christophorou, Andreas Pitsillides, "MBMS Handover Control for Efficient Multicasting in IP-Based 3G Mobile Networks", ICC 2006, June 2006


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