Measuring the point-to-point available bandwidth in the Internet

Master thesis topic proposal for MEI and MIEET students, 2008/09

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January 28, 2009

Introduction

Bandwidth measurements are of interest to users wishing to optimise end-to-end transport performance, particularly those that have the capacity to choose between more than one transport network, such as in multi-homing networks. Techniques for accurate bandwidth measurement and short term estimation are thus important for traffic engineering decisions and capacity planning support.

There are several tools available that measure in real time the point-to point available bandwidth. Topp, pathload, spruce, pathchirp, abget are a few examples. These tools works in various ways. Some are stand-alone, some require a server running a the end point, some receive information from network landmarks, etc [1].

Project goal

The project goal is to make an update performance comparison of these tools in the Internet using the PLANETLAB network as test bed [2]. The research will identify the most promising tool, and propose and make improvements on its specifications. The research will be a direct contribution to the goals of the European union project COST Action IC0703-Data Traffic Monitoring and Analysis (TMA), to promote the emergence of a European de-facto standard for traffic monitoring [3].

Timeline

- Literature survey: 1,5 months
- Experimental research: 3,5 months
- Thesis writeup: 1 month

Required Skills

- computer network protocols
- computer network programming skills

References

[1] Alok Shriram et al, Comparison of Public End-to-End Bandwidth Estimation Tools on High Speed Links, http://www.cs.unc.edu/~alok/Papers/34310310.pdf

[2] PLANETLAB An open platform for developing deploying and accessing planetary-scale services http://www.planet-lab.org/

[3] COST Action IC0703 : Data Traffic Monitoring and Analysis (TMA)
http://inl.info.ucl.ac.be/projects/cost-action-ic0703-data-traffic-monitoring-and-analysis-tma