

Bandwidth Utilization on Cable-based Broadband Access Networks

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For [IMRG] bandwidth estimation workshop

The primary focus of the Bandwidth Management Project at CableLabs, the research consortium for the cable television industry is the usage of data bandwidth on the cable modem residential access networks operated by the cable industry.

The usage of high-speed data networks by a mass audience has grown dramatically over the last several years with over 15 million cable modem subscribers currently reported in the United States and Canada. In order to gain a better understanding of the nature and use of these networks, CableLabs has initiated the Bandwidth Modeling and Management project. This project has several aspects including the collection and analysis of bandwidth use on live cable high-speed data systems, the development of tools for the modeling and management of data traffic, and assessment of the strategic technical and economic implications of these measurements.

To this end, the project has been collecting and analyzing data bandwidth usage on cable modem access networks for about 2 1/2 years on systems in the US and Canada.

These are some of the primary networks that feed the backbones. This talk will provide an overview of the both individual and collective Internet usage patterns and usage growth for the residential access networks and the applications that dominate this usage have also been analyzed. This talk will include a discussion of the data collection and analysis techniques, distributions of measurements, and key metrics. These metrics include:

- Upstream data consumption;
- Downstream data consumption;
- Total data consumption;
- Data flow symmetry; and
- Individual symmetry.

The talk will also discuss the subscriber and population behaviors observed on the access networks on a qualitative basis. The talk will conclude with a characterization of the applications currently driving Internet usage on the residential access networks and a discussion of how these applications may evolve given current technology developments.