Position paper for ISOC "Workshop on Reducing Internet Latency"
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Cable modems today provide broadband service to hundreds of millions of customers worldwide based on specifications written by CableLabs, in concert with our cable operator members and participating manufacturers. The current version of DOCSIS (3.0) deployed today provides data rates that can be scaled up to >1Gbps (download) and >100 Mbps (upload). In order to continue to meet the demand for bandwidth well into the future, CableLabs is in the process of drafting the DOCSIS 3.1 specification, which will deliver data rates an order of magnitude higher. DOCSIS 3.1 technology will be deployable on existing networks, without requiring costly upgrades to the plant, and as a result the expectations are that cable operators will be able to quickly adopt it and deploy it widely.

In addition to making significant increases in bandwidth, CableLabs has a keen interest in ensuring that the new specification provides improvements in other areas, including a meaningful reduction in packet forwarding latency. Due to the recent work of a number of individuals, including Marcel Dischinger, Jim Gettys, Kathie Nichols, Van Jacobson, Eric Dumazet, Dave Täht, and Rong Pan, there are some interesting options available to solving one important contributor to overall latency. While these new "smart queue management" algorithms are demonstrably better than simple tail drop queuing, they come up short because they have little useful information on the relative latency sensitivity of the packets in the queues that they are managing. The result is either that no differentiation is made, and we see the inevitable tradeoff between latency and throughput performance, or that inferences are made that may or may not be true.

One key component to "Reducing the Latency of the Internet" is to ensure that we focus on improving packet forwarding latency for packets (applications) where that is, in fact, desirable, so that we can maximize our impact there, yet ensure that other applications are not negatively impacted.