

Characterizing Broadband Services with Dasu

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We present the broadband characterization functionality of Dasu [1], showcase its user-interface, and include side-by-side comparisons of competing broadband services. This poster complements Sánchez et al [1] (appearing in NSDI) and its related demo submission; both focus on the design and implementation of Dasu as an experimental platform.

As mentioned in [1], Dasu partially relies on service characterization as incentive for adoption. This side of Dasu is a prototype implementation of our crowdsourced-based, end-system approach to broadband characterization. By leveraging monitoring information from local hosts and home routers, our approach can attain scalability, continuity and end-user perspective while avoiding the potential pitfalls of similar models.

Dasu currently includes the following measurements for broadband characterization: (i.) latency to the first public IP hop (last-mile), last private IP hop (last-meter), primary and secondary DNS servers, egress points, and content servers for popular websites (ii.) download and upload throughput, latency, and packet loss as measured by the Network Diagnostic Tool (NDT) (iii.) DNS lookup performance and (iv.) web browsing performance (page-loading time) for the 20 most popular websites (ranked by Alexa.com). These measurements are extensible, as it is built on the same framework presented in [1]. Dasu also collects passive performance metrics when available, such as snapshots of BitTorrent performance and average throughput rates measured by YouTube.

Dasu's user interface includes summaries of these measurements, including a comparison of the average performance seen by other Dasu users in the same region on other ISPs. Since many users have restrictions on their monthly bandwidth usage, Dasu includes a history of bandwidth usage due to BitTorrent and other traffic from the localhost. When available, Dasu uses UPnP counters to accurately keep track of the users' total bandwidth consumption.

In addition to service characterization, a key goal of Dasu is to be able to enable a comparison of ISPs on users' terms – essentially the performance of their network applications. For example, our goal is to compare ISPs in terms of web browsing, video streaming, gaming, or VoIP performance.

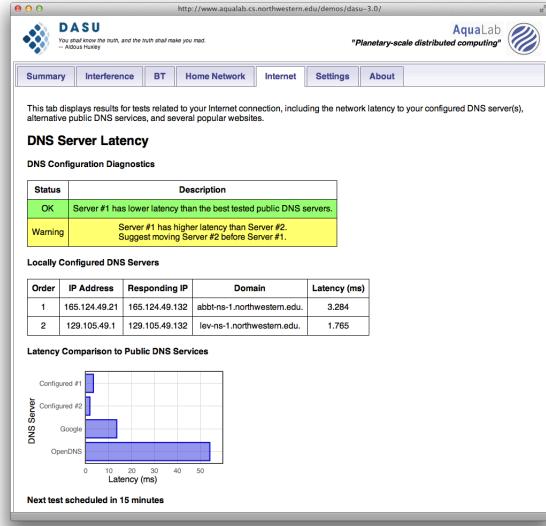


Figure 1: Sample screenshot of Dasu's summary of a user's Internet service

Poster & Demo

This poster focuses on the results presented to users through the Dasu client. It includes a demo of Dasu characterizing a sample user's Internet service. Figure 1 shows an example of what is presented to the user when running Dasu. In this case, Dasu detects that the user's DNS server configuration is suboptimal, since the secondary server has a shorter response time than the primary server. In the poster, we include multiple examples of such issues as well as Dasu's suggestions on how to resolve them. Finally, the poster also includes illustrative results in comparing performance across ISPs, as well as a sample of results as presented to the user.

References

- [1] SÁNCHEZ, M. A., OTTO, J. S., BISCHOF, Z. S., CHOIFFNES, D. R., BUSTAMANTE, F. E., KRISHNAMURTHY, B., AND WILLINGER, W. Dasu: Pushing experiments to the Internet's edge. In *Proc. of USENIX NSDI* (2013).