Rethinking PlanetLab for Internet Measurements

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PlanetLab is a popular platform for networking research experiments. In addition to offering a distributed computing testbed, it appeals well to scientists conducting large-scale network measurements. In this context, the analysis of the Internet topology (such as inter-domain routing, the detection of ISP interconnection agreements, etc.) represents a particular case, raising the question of whether the connectivity of PlanetLab nodes is representative for the targeted measurements. The research community has examined this issue for many years, and the conventional wisdom has been that PlanetLab is not representative for the Internet in general, although it does provide an acceptable approximation in certain situations.

However, the Internet is changing. Within the past years we have witnessed an increasing trend of the traffic volume towards large content providers and content distribution networks (CDNs). Because of this, users are closer to the web servers than before, which requires a reconsideration of how the PlanetLab interconnects to these service content providers, helping researchers validate or not their future research work in this direction.

A preliminary large scale experiment, which we conducted from PlanetLab nodes, revealed the PlanetLab nodes are not unlike the commercial Internet. First, we remark the tendency of hyper-giant providers like Google, Facebook, Amazon (or other CDNs) to have a point-of-presence close to their users, in many cases just one autonomous system away. These conclusions support the idea that global research and educational networks (GREN) feature ISP agreements similar to commercial networks.

It also remarkable the use of Internet Exchange Points (IXPs), in around a quarter of popular destinations, an option of interconnection preferred by some companies such as Google. The strategy of large content companies to interconnect better with the edge of the internet has benefits to Internet measurement projects performed from within a GREN. While PlanetLab continues to be a research oriented platform, nowadays it has a high potential for interacting with popular content providers in the a manner similar to the commercial Internet.